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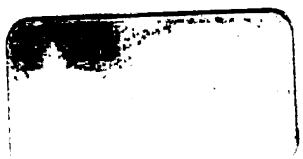

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TRANSACTIONS

OF THE

INDIANA STATE MEDICAL SOCIETY

1896.

FORTY-SEVENTH ANNUAL SESSION,

HELD IN

Fort Wayne, Ind.,

THURSDAY AND FRIDAY, MAY 28TH AND 29TH, 1896.

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PREFATORY NOTE.

The Transactions have been kept within the limit of size and expense requested by the Society. This has been done by omitting the lists of papers, the Kemper index and the Constitution and By-Laws. The book has also been shortened by the omission of the discussions of papers except such notes as were taken by the editors of the Indiana Medical Journal and the Fort Wayne Medical Magazine and published in the June issues of these journals. From 75 to 100 pages of discussions were lost through the inability of the stenographers employed to correctly report them. The Committee on Publication waited for the report of the business proceedings and discussions until the last of September. Finding that the copy was not available, the contract was let to the Journal Company of Fort Wayne. The first proof was sent October 8th, and the work has continued to the present time, February 8th.

The papers have all been published except two not given to the Secretary or Committee, and one which every member of the Committee read and each voted not to publish. The papers ranged from three pages in length to fifteen pages.

The length of the respective papers is as follows: Drs. Geo. F. Kieper, Mary Wherry, and W. P. Wherry, three pages each; F. C. Heath, Geo. P. Green, G. B. M. Bowers and T. Potter, four pages each; H. M. Smith, H. A. Duemling, A. J. Hall and Jas. F. Hibberd, five pages each; D. W. Stevenson, J. O. Stillson, T. Potter, John F. Fattic, six pages each; F. B. Wynn, seven pages; Martha J. Smith, G. W. McCaskey, Guido Bell, O. A. Rea, Delia H. Howe, eight pages each; J. A. Goldsberry, nine pages; Miles F. Porter, L. H. Dunning, J. L. Masters, H. O. Pantzer, W. I. Kithcart, J. E. Larkins, ten pages each; B. Von Sweringen, eleven pages; J. Link, thirteen pages; A. E. Sterne, fifteen pages.

The average numebr of words to a page in this book is 450. A twenty minutes paper should contain about three thousand words, or a little less than seven pages. Fifteen of the papers exceed this number; some nearly or quite double it.

The Chairman has never found it in his heart or mind to cut down papers, all of which have been patiently listened to by the Society, and some of which have incited an hour's discussion. It is a delicate function; useless introductions and purely extraneous matters he has weeded out, but the warp and woof of good fabric can only be determined by the writer and listener. Nor has the Committee excluded any papers because in its judgment they were of less value to the Society than others. If a County Society sends a paper up because of its merits and the State Society listens to it without adverse criticism and refers it to the Committee, their duty is to edit and publish the paper rather than return it to the local society with the comment that it is not suitable for publication.

The Chairman wishes to extend his thanks to the Chairman of the Committee on Arrangements, Dr. A. E. Bulson, Jr., of Fort Wayne, for his efforts to rescue the reports and discussions from the incompetent stenographers, and to make a satisfatory settlement with them; also to the present Secretary, Dr. F. C. Heath, for the careful preparation of the County and Alphabetical Lists of Members and the proof reading of the same.

The Society should make it mandatory upon the Committee to issue the reports hereafter within ninety dayes of the time of meeting. This may be readily accomplished if the Committee on Publication is permitted to engage a stenographer.

Respectfully submitted,

A. W. BRAYTON,

Chairman Committee on Publication.

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PRESIDENT'S ADDRESS.

THE PHYSICIAN'S RELATION TO THE BODY POLITIC.

MILES F. PORTER, A. M., M. D., FORT WAYNE.

Biology has taught us that in the lowest forms of life there is a simplicity of morphology which agrees with a simplicity of function, while in the higher forms there is a complexity of structure corresponding to a complexity of function. This differentiation of tissues always accompanies a differentiation of function; the one is necessary to the other and both become more and more marked as we ascend the animal scale, until we find it most marked in man, at once the most complex and the most perfect animal.

The prime object of this differentiation is the conservation of force, i. e., the greatest possible attainments with the least possible expenditure of energy. This differentiation amounts then to the setting aside, as it were, of certain tissues, particularly constructed and arranged to form organs and apparatuses peculiarly adapted for the performance of particular functions.

The health of the organism as a whole can only be maintained by all of its organs and apparatuses performing their functions properly. If any one is deranged the whole is disturbed. In an animal of high type one organ cannot take upon itself the performance of the functions of another. In other words, certain functions must be performed by certain organs or not at all, i. e., the duties and responsibilities are by this differentiation individualized.

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The history of the government teaches us that in politics also, the same processes of evolution have been at work.

Commencing with the primitive forms of government of the ancients, we note, as we ascend the scale, an ever-increasing complexity of structure and function with a coincident and necessary increase of individual responsibility, until we reach the republican form of government, which is at once the most complex and most nearly perfect form known, and in which the responsibility of the individual is the greatest. This feature of individual responsibility constitutes not only the chief charm of a republican form of government, but also its principal claim to be a higher type of government.

The duties and responsibilities of the citizen of a republic are much more grave than are those of a citizen of a monarchy or empire. A monarchy may do fairly well with a people whose passions, prejudices and bigotry would make the successful establishment and maintenance of a republic impossible.

A republic, the majority of whose people are ignorant of and careless as to their political duties, may attain a modicum of success, but to attain to the fullest possible measure of success her people must be intelligent, must fully appreciate their political responsibilities and stand ever ready and willing to discharge their political duties.

As the cells of which the human body is composed have certain properties and functions in common, so the citizens of a republic have certain duties and responsibilities in common; but as there are certain groups of cells set apart in man for the performance of certain important functions, which can be performed by no other group, so in a republic certain groups of citizens are by education and environment peculiarly adapted for the performance of certain political functions. Failure on the part of these citizens in the performance of these functions will as certainly prove detrimental to the body politic as would failure on the part of a single organ of the animal body to perform its duty prove detrimental to the animal body. With both bodies the harm resulting from the loss of function of one of its parts will depend upon the importance of the part and the extent or degree of the loss.

As citizens we of the medical profession share, in common with

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all other citizens, certain political responsibilities, and as physicians we have political duties to perform which no other class of citizens can perform, and which must be performed if the health of the republic be preserved and its growth and development progress as they should.

The political duties of the physician are of as high an order as are any in his calling. The returns for their proper performance are as great and more certain, and his obligation to perform them could not be more binding or sacred.

To save a human life by the judicious use of drugs or by the skillful use of the knife is an achievement of which one may well be proud, but how much more grand and praiseworthy an achievement would be the rendering of the use of those drugs or of that knife unnecessary. The one is as the flickering light of the lamp whose feeble rays bring into uncertain relief the objects in its immediate vicinity while they render the surrounding darkness more impenetrable, while the other is as the light of the sun which conquers the darkness of the earth by day, and before whose reflection at night the stars hide themselves.

We have few if any specifics for the cure of disease, but we may in a very great measure prevent it.

If there be any of my hearers who are inclined to under-estimate the power for good which the medical profession may wield through political channels let me ask them: From whence came the good to humanity of Jenner's discovery? Did it come directly as a result of increase in medical knowledge, or did it come through political channels, via compulsory vaccination?

No one will question for a moment but that much benefit has already been derived from Koch's discovery of the bacillus of tuberculosis, nor on the other hand, can there be any doubt that the greatest possibilities for good of this discovery lie in the direction of wise legislation.

The political importance of the question of the spread of tuberculosis may be more fully appreciated if we stop for an instant to consider, first, that tuberculosis is a contagious disease and largely preventable; and second, that tuberculosis costs the United States more than seventeen lives every hour.

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The law in Indiana values a life at $5,000. We are losing $85,000 hourly then through this one disease alone. That a large percentage of these deaths might be prevented by the enforcement of proper laws there can be no question of doubt. From a utilitarian standpoint, this would seem a sufficient argument in favor of prompt action along this line. How much more urgent seems the necessity when we stop to think of the suffering, the sorrow, and the humiliation which this frightful mortality entails.

That there is a "growing appreciation of the contagiousness" of consumption there is an abundance of evidence. The town council of Alameda, California, (*Medical News*, April 11, 1896), requires that physicians report all cases of tuberculosis, whereupon directions are given for the proper isolation of such cases. Chicago (*Loc. Cit.*) is about to erect separate buildings in connection with her county hospitals for the use of consumptives. How long can Indiana afford to wait before taking action in this matter?

Every epidemic should be regarded as a disgrace, a disgrace to the community in general and to the medical profession in particular.

In matters pertaining to public health and medical legislation, the United States has not kept pace with other nations. Indiana is in about the same position in the procession of the states in this regard as is the United States in the procession of nations. I am sorry that candor compels me to say this, for I am an American from the top of my head to my heels, and a Hoosier to the back-bone, and am proud of my country and of my state, but I believe that repentance always precedes true conversion, and that to acknowledge a fault is almost equivalent to remedying it. As a parent who winks at the sins of his child is not a good parent, so the citizen who refuses to cry out against the political sins of his country, be they of omission or of commission, is not a true friend of his country.

The cranks, like the poor, we have always with us, and medical education and education in general, seems to us threatened in three directions by three separate classes of these individuals. To avert the dangers to which we refer is the plain duty of the medical profession, for the questions involved are in each case essentially medical in their nature. I refer to the so-called anti-alcoholic teaching which has been instituted in the public schools in several states, and

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to the efforts of the anti-vivisectionists and the anti-vaccinationists to secure legislation along the lines of their peculiar hobbies.

Regarding the former we may say that in so far as concerns the purely moral aspects of the case, the medical profession is not particularly concerned; but inasmuch as some, at least, of the text books contain statements that we know are not true, and others that are of more than doubtful scientific value, we should not hesitate to make ourselves heard upon the subject; for true education makes "good minds, strong wills, clear judgment and robust bodies," and its cause can only be hurt by the teaching of untruth.

Among the stepping-stones which lead to the temple of education, falsehood is not to be found. That medical education is really threatened by the anti-vivisectionists I do not think is generally believed by the profession. That it is so threatened is easily proven by citing the attempts in the way of legislation already made by these fanatics, as witness the bill now pending in both Houses of Congress of the United States, which, as says the Medical Association of the District of Columbia, " if enacted into a law will prohibit vivisection or animal experimentation in the District of Columbia, and effectively close the Biological laboratories connected with the Surgeon-General's Department of the United States Army, Bureau of Animal Industry of the Department of Agriculture, and Marine Hospital Service, and prohibit all illustrative experimentation on living animals in the Medical Colleges of this district." I can, perhaps, offer to this society no more convincing proof of this danger than to say that one of our own members, Dr. Weist, of Richmond, considered the danger so real that he made it the subject of his address at the last commencement of the Fort Wayne College of Medicine.

For fear that the immunity which we have so long enjoyed from small-pox may lull us into a dangerous apathy concerning the necessity of vaccination, I venture to quote the following from the New York Times; (*Journal of the American Medical Association*, April 18, 1896.) " Anti-vaccinationists in this country may well ponder on the experience through which the citizens of Gloucester, England, are now going. For years that city has been a center of the anti-vaccination craze, and so prevalent was this particular form of

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idiocy, that the law in regard to the employment of this safest and most certain of all the prophylactics known to medical science has long been a dead letter.

"A whole generation of helpless children was allowed to grow up ungarded, and every school became simply an invitation to pestilence. Now the invitation has been accepted, and such an epidemic of small-pox is raging at Gloucester as has been rarely equalled in modern times, except among the savage tribes of Africa and Greenland. The hospitals are crowded to over-flowing, business is at a stand-still, churches and schools are closed, and toward the cemeteries moves an almost continuous procession of wagons laden with the dead."

Before the brute force of facts such as these, all the tomes of silly sentimentalism and pseudo-scientific twaddle ever written against vaccination must fall as fell the walls of Jericho at the blasts of Joshua's trumpets.

This country is losing large sums of money daily, each day the population of its silent cities of the dead is being increased, and the cries of the suffering and bereaved ones may be heard, all for the want of properly constructed and equipped hospitals for contagious diseases. Oh! that this suffering would, like Duncan's "many virtues, cry like angels, trumpet-tongued, against the deep damnation" of this needless sacrifice. Every city of 5,000 or more inhabitants should have a hospital of this kind for the care of both charity and pay patients, and they should at all times be open for the reception of scarlet fever, diphtheria and small-pox. This society can, through its influence, have every city in this state supplied with a hospital of this kind if it will but make the effort. When shall we commence the good work?

In Michigan the law requires that instructions be given in the public schools on the best methods of preventing the spread of contagious and infectious disease. That such instruction is sadly needed all practicing physicians can attest. With the choice of text-books and methods of instruction, supervised by those versed in bacteriology, aided by experts in pedagogy, the power for good of this law can hardly be over-estimated. The profession should unite in an effort to secure such instruction in all public schools.

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Indiana not having many crowded cities does not as yet feel as do other states, the need of reform in tenement construction, but this question will, as our cities grow from year to year, increase in importance for us. If we will we may learn from our more crowded neighbors how to avoid much of the error into which they have fallen and which made the histories of their tenement districts so teem with tales of over-crowding, bad air, and lack of sunlight and their necessary resultants, physical, mental and moral deterioration. Upon this subject Dr. J. Riddle Goff says; (*Medical News*, April 4, 1896.): "It is futile to appeal to the humanity of the landlord, for he is the exception who voluntarily tears down a rickety house yielding twenty-five per cent. and puts up a sanitary tenement yielding ten per cent.

"It is useless to look for reform to the tenants themselves, stolid and morally benumbed as they are. As long as unfit habitations exist they will find tenants, and there is only one way to solve the problem, and that is to invest the Board of Health with power of expropriation. Where a tenement cannot be made a sanitary habitation, or where a landlord refuses or neglects to make it so, the city should step in, pay the owner what the building is worth for old material, tear it down, and leave, at least, a breathing space where before was a hot-bed of physical and moral infection.

"If there ever was an excuse for the State to exercise its power of eminent domain, it is where its poor stand in need of light and air, which should be free to all; where vice and crime flourish because virtue and honesty are impossible; where the very existence of the State is threatened, because a large part of its younger citizens, if they escape disease, fall victims to social rot."

Whether or not Indiana shall avail herself to the full extent of the prophylactic measures at her hands, will depend in a great measure upon the efforts of her physicians.

Another question which has already assumed much importance in some localities, and which must grow in importance as our population increases, is the question of disposal of the dead. That our present method endangers public health, that it is unscientific, and that it is expensive, no one will gainsay.

Burial as a means of disposing of the dead is surrounded by the

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halo of long established custom, and it will perhaps take some time before the prejudice in its favor is overcome, but I believe and hope that before another generation passes away some method will have been adopted which will be less revolting than burial, which will not endanger the living, and which will result in transforming the dangerous, albeit consecrated cities of the dead into pleasure-giving, health-promoting parks, consecrated to the living. When we stop to think how necessary parks are in crowded cities, and how sad the need of them, even in our young cities, it is almost painful to learn that even in one of the youngest of them (Chicago) there are more acres in cemeteries than in parks.

We of the present day would turn with horror and disgust from a perusal of the early records of our criminal courts, and yet there may be found in the court records of today proof that some of our existing laws are less in keeping with the present state of knowledge and civilization than those of our forefathers were with the conditions of knowledge and civilization then existing. To hang a man by the neck until he is dead before a crowd of gaping, sensation-loving spectators, for the commission of any crime, is in all conscience, bad enough under the circumstances, but to hang one for doing that which he cannot help doing, or that which he considers it his duty to do, or for the commission of an act the heinousness or results of which he does not appreciate, is a travesty upon justice and a disgrace. And yet men have been hung in the United States within the memory of every member of this society, who were, according to the universal verdict of the profession, insane, and therefore not criminals before the law. So far as my knowledge goes, Indiana has never been guilty of such a crime against humanity and civilization, but that she has sentenced men to prison for life who were insane, and not, in the eyes of the law, criminals, the records of an adjoining county will prove. In our own county men have been sent to prison who should have been sent to a hospital. Permit me to relate a case in point.

A man was first an inmate of the reform school, but was later placed in the school for feeble-minded youth. He was released from the latter institution something over a year ago, and signalized his release from the custody of the State by assaulting two little

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girls at Ox Bow Bend, on the Maumee River, near which place his father at that time resided. A few days later he assaulted another little girl at Edgerton. The day following this last-mentioned crime he assaulted with fiendish brutality Mrs. ————. He was convicted of this crime and sentenced to one year in the penitentiary, and his term expired Friday. On the day following his arrival home from the penitentiary he committed another criminal assault, for which he now lies in jail. Such in substance is the history of this criminal as given by the daily papers of this city. I am glad to be able to say that this man was finally taken from jail to the hospital, and not to the penitentiary.

It will be generally accepted, I think, that the first and most important point aimed at in criminal law is the protection of the innocent; that the law should be just and humane; that it should be of such a nature as would insure swift and certain execution; that the penalty for crime should partake in as small degree as is possible of the elements of punishment and revenge, and that the penalty for crime should in so far as possible partake of the nature of a logical sequence.

All this I say will, I think, be universally admitted. Judged by this standard then, what will be the verdict passed upon our criminal laws as they now exist? Does a law which imprisons a rapist for a few years and then turns him loose upon a community with his hellish instincts and passions not one whit subdued, protect, to the fullest extent possible, the innocent?

In the light of our present knowledge concerning the inheritance of crime or criminal instincts, does the law which permits propagation of a race of criminals offer that protection to the innocent that it should offer? Is such a law humane? It would be equally just and equally humane to punish a three-months-old babe for not complying with the rules of etiquette and decorum which govern adults.

Is it logical or does it protect the unborn children or their ignorant and erring mothers to imprison an abortionist for a couple of years and then restore to him not only his liberty but his privilege to practice a profession which he has already prostituted? Is there not danger that he will again use his profession to cloak his

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criminal practices, and would it not be just and safer to deprive him for life of the privilege to practice ?

My object in writing this paper was to arouse, if possible, in the profession a fuller and more general appreciation of our political duties and responsibilities, and to point out some of the many ways in which through political channels, and through these channels only, incalculable good may be accomplished in the way of prolongation of life, prevention of sickness and amelioration of suffering. If I have succeeded in however so slight a degree I shall feel amply repaid for my effort.

47 West Wayne Street, Fort Wayne, Ind.

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PLACENTA PREVIA.

H. M. SMITH, M. D., VINCENNES.

Placenta previa is an accident of rare occurrence, but its gravity is such as to claim the serious consideration of our profession. That it is rare I can testify, for in a reasonably extensive practice of more than half a century, I have met with only two cases in my own patrons and two in consultation, which might be properly called placenta previa centralis. Placenta lateralis is of more frequent occurrence, but of less serious character and will not be considered in this paper.

Less than two hundred years ago the accident, and consequent hemorrhage, was called to the attention of the profession by Giffart, a French accoucheur, and since that time it has received much consideration by obstetricians. The consensus of opinion as to its frequency is that it occurs about once in five hundred pregnancies. The accident is said only to occur in multiparas, and it is generally in the second pregnancies, but this does not coincide with my own observation, as one of which only occurred in a second pregnancy.

The fatality attending hemorrhages to the mother consequent upon placent previa has been variously estimated at from ten to forty per cent. and that to the child at about seventy per cent.

Many opinions prevail as to the cause of the accident. One is that the woman, having suffered from leucorrhea, and the lining of the uterine cavity, having become smooth from the exfoliation of the epithelium, the impregnated ovum, having become detached from the cornu of the uterus, as might be the case sometimes, and, instead of becoming lost as waste material and thrown out, found

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lodgment near or at the internal os, and there developed. Another opinion advanced is that the ovule drops down to the internal os by accident independent of the condition of the lining membrane, and there becomes impregnated and developed. Others have advanced the idea that the membrane might not be so turgid sometimes, as when normal, and hence the descent of the ovule and impregnation at the internal os.

The ova having become abnormally planted gestation is sooner or later accompanied by hemorrhages incident thereto. The question then arises, at what periods of pregnancy are these bleedings liable to occur, and what is the immediate cause? It having been conceded that the hemorrhages generally occur first about the beginning of the sixth month of pregnancy, the upper half or two-thirds of the womb is alone developed and that the hemorrhages occur only during the development of the lower segment of the organ and at irregular intervals, when a rupture by such development occurs, of the placental vessels. Again, it has been suggested that the taking up of the neck of the uterus during the last two weeks of pregnancy causes the tears to take place, resulting in the bleedings. But as these bleedings occur sometimes many weeks before the end of gestation the latter alleged cause is without foundation. The development of the neck of the womb no doubt causes the hemorrhages through tears of the placenta. The early bleedings more surely indicate placenta previa centralis; those occuring during the last two weeks of gestation indicate placenta previa lateralis.

The diagnosis of this accident is not difficult when we have obtained the history of the case, since these repeated hemorrhages, without known cause, occur frequently during the latter part of pregnancy. The abdomen is more globular than ordinarily observed and the touch to the finger of the presenting part is soft and doughy in character. The early application of treatment, when suspected or diagnosed, is important and should be rigid, if we expect to tide the case over to the full term of gestation—of all things rest is the most important. The feces should be kept soluble and bowels regular, and the woman kept off her feet and from any manual labor or exercise. A course of this kind will prevent many

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hemorrhages; but when they do occur under such conditions, they are not profuse nor frequent and are generally easily controlled with astringents locally applied and ergot and sedatives internally. The value of ergot in such cases is contested by many. In persistent bleedings I have not hesitated to use it. The tampon disinfected is a valuable remedial local agent and should always be resorted to if the bleedings are profuse or persistent. But when the crisis arrives, whether at full term or before, when the foetus must be expelled to save life, the best procedure to attain such a result, bearing in mind the good of the mother, and of the child also, if viable, is one of great importance, but is a debatable and unsettled question. All practitioners agree that the uterus should be speedily emptied of its contents, but whether the placental mass should be pierced, in situs, with the hand, and the feet seized and brought down. or whether one side of the mass be separated from the uterus and then proceed as above, or use the forceps on head, or whether the whole placenta shall be loosened before delivery, are the debatable points.

Fortunately for mothers and the physicians' feelings, these cases are comparatively rare, and I have met with only four cases, two of which were my patients. The procedure that will promise the greatest safety to mother and child is the one that should be adopted. The complete separation of the placenta at the onset I think will cause almost certain death to the child from hemorrhage, as its source of life would be thus completely cut off, especially if any great delay occurred in its delivery. Two objections are urged against piercing the placenta centrally:

First—The danger of rupturing the large placental vessels.

Second—The supposed lessening of calibre of the outlet.

Any procedure compels the rupture of some bleeding vessels. The piercing of the mass, I contend, causes no greater hemorrhage, if as much, as the loosening of one-half of the organ. As to the lessening of the calibre, the danger is more imaginary than real, as the soft parts are stretchy and yielding. If in fact this be the case, the uterus and placenta would only suffer and no delay would result from the passage of the child through the pelvic bones. When the entrance through the placenta is made and the child is brought

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into it, it acts as a temporary tampon on all sides and the hemorrhage is, for the time being held in abeyance; and if this procedure be the one adopted the chances of saving the life of the child are greatly enhanced, and the danger to the mother no greater than if the former mentioned methods are resorted to.

Case No. 1, previously mentioned, occurred in a multipara advanced in years. The physicians attending had resorted to ice, astringents and the tampon with only temporary success. I advised forcible and immediate delivery, but was over-ruled by the three elder physicians, and in a few hours the patient succumbed from the loss of blood, undelivered.

Case No. 2 occurred in my own practice. She was a multipara pregnant the third time. I had not seen the patient previous to my call to staunch a severe hemorrhage. I learned from the family that bleeding had occurred irregularly for two or three months previously. I found the woman in labor, os fairly well dilated, diagnosed placenta previa centralis, and after sending for an assistant, and administering ergot hypodermically. I forced my fingers through the presenting placenta, nearly centrally, and finding the head presenting pushed it up, carried my hand up, seized the feet and brought them down through the placenta rupture, and soon had the child delivered. There was some delay with the head, but as it acted as a tampon, not much loss of blood occurred therefrom. By this time the assistant arrived, who resuscitated the child, and the placenta being at once detached, we soon had the satisfaction of knowing mother and offspring were safe.

Case No. 3 I saw only ten hours before delivery. It was a multipara with a half dozen children. Another physician having had the case under observation and treatment, for some cause (probably fearing a fatal result) refused to further see the woman. I diagnosed placenta previa and proceeded to staunch flow by astringent and tampon, and returned to the city for assistance, it being some miles distant. In this case when tampon was removed, I found os partially dilated (it not being near full term of gestation) and one edge of placenta detached; the hand was carried up, feet drawn down and foetus delivered dead. In this case hemorrhage was frightful and in her anemic state the chances were that she might

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not survive, but stimulants and ergot having been administered freely hypodermically, and other means used, especially a hot water injection, we had the satisfaction of seeing the mother in safe condition.

Case No. 4 occurred in a young woman with the second pregnancy about the seventh month. As a consultant I was called. When I arrived, the hemorrhage was somewhat staunched, placenta previa diagnosed, and as she had been having severe hemorrhages occasionally for some weeks previously, and the present one was alarming, we determined on forcible delivery. The placenta was pierced at the most accessible part with the fingers, the hand carried up and the feet brought down, and the child speedily delivered. The flow of blood was considerable, but after detachment and expulsion of placenta, the womb rapidly contracted and the danger was over. The child was not viable or was too weakened by the hemorrhage to survive but a few hours.

In the cases under observation only one mother was lost, and, most likely, she could have been saved, and perhaps the child, as she was far advanced in pregnancy when the fatal hemorrhage occurred, if a timely, forcible delivery had been resorted to. Of the delivered children only one was saved, but that one was the only one that had arrived at or near maturity.

I am satisfied that an early delivery, when alarming hemorrhages occur after the period of viability of the child has been reached, will lessen the ratio of mortality of mothers and children if the plan is pursued as indicated in the cases here reported.

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THE FUTURE OF OBSTETRICS.

MARY WHERY, M. D., FORT WAYNE.

While the past quarter century has shown wonderful advances in all other departments of medicine and surgery, the practice of obstetrics has lagged behind and interested the profession less than it should. This may be accounted for by the prevalence of two mistaken notions about midwifery that should be corrected. One is that gestation and parturition, being physiological processes, are outside the domain of genuine medicine. This reasoning would apply quite as well to digestion. But the fact is that there are numerous ailments consequent on conception that require medical care, but that do not sometimes receive it, owing to the erroneous theory that processes cannot be morbid and physiological at the same time. Bleeding from a severed artery is a physiological process, but a dangerous one. So, also, from the moment that the development of the embryo begins to disturb the usual health of the mother, she should be kept under the eye of the family physician, and the whole process of gestation should be scientifically conducted to its legitimate conclusion. In the first four months of pregnancy the patient should be seen occasionally; during the next four months she should report monthly at least, and during the last month she requires attention oftener. Investigation should be made into every detail affecting her health and safety and the success of her anticipated delivery.

Her diet, clothing, habits, exercise and occupations should be prescribed, and long before the critical hour it should be known whether there is any deformity of the pelvis, obstructive tumors, kid-

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ney disease, or wrong position of the foetus. It is too often the case that puerperal women, and even primiparae, are left to the treatment and advice of chance neighbors and old crones who are no better skilled to manage such cases than to treat typhoid fever. The effect of relying on these people is that a physician is not summoned until the last moment, when it may be very difficult to overcome conditions that could have given little trouble if recognized earlier. Yet all the responsibility is piled upon him. The truth is the medical profession has never taken the department of obstetrics into its hands to the extent that it should. Ignorant, self-constituted midwives usurp this office, with the result that a considerable number of the female disorders treated by gynoecologists are due to the system of allowing incompetent persons to treat patients during child-bearing. The other mistaken notion to which allusion was made is that obstetrics is a distinct and separate department of medical practice. Practitioners were once divided into physicians, surgeons and accoucheurs. But now the colleges do not turn out mere physicians or surgeons, but members proficient in both branches. Obstetrics is the connecting link between medicine and surgery, and partakes of the nature of both. It is not a specialty, but the foundation stone of general practice. Medical colleges are trying to give it more attention and to provide opportunities for instructions in clinical obstetrics; but above all, they should not give any special diploma in obstetrics either to physician or midwife. It is even more absurd to give special diplomas to occulists, or to create occulists by the royal road of a three or six months course in opthalmology without any instruction in any other branch of medicine. Obstetrics should not be practiced by persons ignorant of every other part of medicine. It should be considered an integral part of medical work, and should not be delegated to nurses or ignorant persons, or those outside the medical profession. The obstetric nurse has her proper place, as a trained nurse has her proper place in relation to surgeons and physicians, but she should not be a medical practitioner, even though her practice be restricted to cases of confinement. The business of the nurse is to act under the directions of the medical practitioner.

The multiplication and careful training of obstetric nurses

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should be a duty of medical colleges. But there is no reason why trained nurses should not all be obstetric nurses, so that only one class of nurses need be recognized. The comparative meagreness of the literature of obstetricts has often been remarked. While quite a number of authors have written upon it, their works are in great part mere repetitions of each other, and the instances of original treatment of the subject are few and far from thorough. The immunity from pain and protracted labors enjoyed by the women of the lower races is a suggestive fact. The aim of progressive medicine should be to render the partruition of civilized women as easy and safe as that of their less advanced sisters. Surely there remains much to be done by medical science to remove the dangers and terrors of childbirth, and this should be an incentive to move the best thinkers of the profession to remove for all the women the primitive limitation of the curse that impends over every daughter of Eve. The laurels of Jenner and Pasteur and Koch would fade in comparison with those of the discoverer of the new obstetrics. I mention a final reason why all women about to be confined should secure the services of a qualified doctor. No doubt many cases of natural labor require no particular skill for their management. But engaging a physician to superintend the event is like an accident insurance. He may not always be imperatively needed, but yet in some unexpected moment his presence and skill may mean escape from death for the patient. It is worth while to guard against these dreadful exceptions to the general rule of deliveries by securing the services of an accoucheur who is better qualified in this particular branch, because he is versed in every department of medicine. It is becoming every year more usual for women to carry insurance on their lives. And the insurance companies if they are wise will insert it as a condition of their policies that these women must be attended in their confinements by fully qualified medical practitioners. This in its turn will tend to a better study of obstetrics.

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VARICOCELE AND HYDROCELE.

J. LINK, M. D., TERRE HAUTE.

I halt between two lines in discussion: the one, the suggestive, to those well versed in pathology and principles of technique in surgical work, well backed by solid foundation in regional and minute anatomy; the other, as teaching the general practitioners who may be called upon to act, either in giving advice, or possibly to render treatment in a surgical line.

The charming results obtained, as I have observed incident to my own practice, manifest in a perfect evolution in the health, temperament and masculine character of the patient not only following operations for the relief of such troubles, but after accidental loss of scrotal tissue from trauma as well, all of which I have witnessed in too many instances, to admit, I think, of being recorded as mere coincidences; but as a result of the more perfect physiological support with consequent increased tone of function of this highly sensitive and reflexly vital organ. So that I, therefore, not only urge the necessity and advantage of an operation for radical cure of the disease, but more especially of shortening the scrotum as of paramount importance to the physio-mental welfare of the individual. The delicate, effeminate, unself-reliant boy, or young man, has within a few months after such treatment become stout, rugged and independent, and in no instance have I been disappointed or had reason to regret the necessity for the operation or having done the operation. As to whether varicocele is a cause or an effect of physical delicacy and inassurant individuality, is a question of too much importance, and would involve too great a range of investiga-

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tion to be met in an article of the necessary limits of a paper before a society of general practitioners. The points that I have selected, therefore, for consideration tonight are, first, prognosis and advice to the patient as to the course of treatment to be purused; and next, after the necessary knowledge of the anatomy of the region, the technique of the operation.

A redundant scrotum, or pendulous bag, is usually associated with more or less effeminacy and lack of self-assertion, either as a cause or tendency to produce it. Varicocle is almost invariably associated with more or less delicacy of constitution, and if not traumatic, I should be forced to say a sure indication of its existence; and if traumatic, I should expect it to be followed sooner or later with more or less phenomena of weakness and mental distress. Of hydrocele I should, as looking at it in the light of a result, have less pronounced views. In fact, I can see no reason in a physiological field, nor from clinical data, to suppose that a pendulous scrotum or a frail constitution should predispose to such effects. As a result I should have less pronounced views; but as a factor only a little less. No man will likely suffer with either without a marked expression upon his general health as well as masculine presence, as the French better express it, embonpoint. That the operation for shortening is advisible in every and all cases of too ample scrotum, I should by no means advocate; yet I am ready to urge its free excision when excuse presents either in trauma or idiopathys as above. I have never seen anything but good results from loss of scrotal tissue. I had the opportunity of witnessing a typical case in point a few years ago in my practice in my vicinity. A field hand laborer had mounted a high rail fence with a hoe in his hand. The rail upon which he was sitting turned when he fell, the upper end of the hoe handle catching him in the crotch, the hoe end on the ground. The scrotum, which was pendulous, was caught between the folds of his under-clothing, and he was thus suspended, his whole weight being held for an instant upon the scrotum, until the skin and a part of the dartos was torn completely away, leaving both testicles denuded of skin covering to such an extent that I experienced much difficulty in securing the coraptation of the edges of the torn skin, and not until the testicles were both forced well up into the groin could this

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be accomplished. I had much doubt and some trepidation as to the practical course pursued. But months and years after gave assurances more and more gratifying in the fact of a healthy condition. The testicles, instead of their becoming atrophied by the abnormal pressure, as I feared, became more firm in texture and larger than before the accident, with evidence of increased, rather than diminished function. There was amply sufficient scrotal bag, quite up to the healthy normal, but far from the pendulous, as before the accident.

The first matter of importance in the operation of our subject is that we should in every instance remove a large proportion of the skin upon the side of selection; if unilateral, I should say the more the better, even to the whole, or at least three-fourths of the whole of the skin upon the one side. If the whole, or the greater part is removed to the medial line, the sliding and the stretching of the skin will give amply sufficient covering and uniform support to the testicles on both sides, and no injury result to either. The incision should be made to extend well up toward the external ring so as to afford ample field for operation under conditions of extreme contraction of dartos and cremasteric muscles, as is apt to be.

And now in cases of operation for varicocle comes the most important element in anatomical knowledge, and particularly that of dexterity in careful and thorough dissection. There is, to my mind, after a long and tedious experience in dissection upon the cadaver, and also some experience upon the living as patients, no region that yields more satisfactory results in revealed phenomena of the beauties of man's study of man in the physical than right here. The keenly sharpened knife in a steady, skilled hand, will nowhere play so fine a part in delicate structures revealed for study or examination, with comparatively little danger of harm to them as vital structures, so that a perfect examination and demonstration of the veins, nerves, arteries, vas deferens and epididymis may be had with proper skill and care, with a minimum of danger to the function or vitality of the parts. This I can explain from the fact of the structures all lying parallel in light film of areolar tissue, easy of access.

I am able to demonstrate all this in the dried specimen which I here take pleasure in showing you, with the blood vessels inject—the

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veins in blue and the arteries in red filling. As you will be able readily to see, the veins are abnormally large, though not knotted as in varicocle. The enlargement, I think, may be justified in attributing here to pendulous scrotum of a delicate boy. A subject of Pott's disease of the spine. Age at time of death about eighteen. Here I learned one of my most impressive lessons in the work done, leading to a practice, which, with one single exception, I have followed ever since, and so far as I am personally concerned was, I assure you, original for all I know, is entitled to the credit of priority. I dissect the veins carefully and as thoroughly isolate them as here in the dried specimen, and then reseat the knotted branches and thickened trunk from the body of the testicle up to a point near the outer inquinal ring or at least well up the cord. This I do by first securing the trunk of the vein above at the point of selection for its severence; or, if I think best, I run a ligature around beneath the vein, securing it without ligation until the dissection below is completed. Then ligate and cut the enlarged vein, thus resecting completely the whole mass of enlarged vessels. I am very cautious about the management of the arteries; much more so than formerly—using every means to avoid secondary hemorrhage with its embarrassments and septic consequences. I try to search out the larger pulsating branches of the artery and ligate them before proceeding with the dissection of the veins below, thus avoiding in a measure, the danger of secondary hemorrhage or embarrassment from small spurts, which are very liable to be lost by the peculiar elasticity and contraction covering them up so as to make them difficult to secure, and they are liable to be lost, but as I have in more than one instance seen cause much more trouble in after treatment, retarding recovery. This was more liable to happen under the open method of treating the wound, allowing it to close cicatrically, as I formerly practiced it, than as now, with the deep buried transverse and circling or running stitches of cat-gut. I practice about the same method of castration where the same hemostatic management is required. I always look carefully to it that the arterial trunks are isolated and ligated before cutting the cord. It may be safe enough to throw a stout ligature about the cord, embracing the vessels and

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all in a common fillet, and as practiced by the farmer in spaying pigs, or the clamping in that of the horse.

But I need hardly tell you one and all that this is not surgery; especially modern technique or so-called "aspetic surgery;" and I will risk the assertion that right here we have more fully typified the beauties of modern technique than in any other region that I can now think of within the domain of the general surgeon. Formerly the dexterous use of the knife constituted the convincing evidence of skill, after the attainment of a pretty thorough knowledge of anatomy. Now we have added to these the careful, painstaking use of the forceps, buried ligatures and cat-gut or other animal sutures. Time limit extended indefinitely. I recently witnessed these in an operation in Johns Hopkins Hospital, where a hundred or more forceps were hanging at one time about the surface of the wound, to be replaced with the silk ligature. Knot cut short and buried. The operation was for the removal of a mamary gland with the cleaning out of the lymphatics of the axilla and curvical-inferior-triangular space. The operation was commenced at 10 A. M. and lasted until 1 P. M. Formerly the watch in a time-keeper's hand registered the merits by limitation of the operation; now the fashion seems to have reversed the order of things, with some advantages in the merits of careful painstaking detail. I should be inclined to seek merit in a "happy medium" of these two extremes.

Hydrocele is probably the least important of the two—varicocele and hydrocele—in so far, at least, as the general health and comfort of the patient is concerned; yet no less a matter requiring careful consideration when we are called upon to give a diagnostic opinion, and still more incumbency when expected to render treatment in a surgical way, either in palliation or radical means of relief. The causes of hydrocele, like that of varicocle, I shall not here try to enumerate, nor am I quite sure that they are at all times discernible. Our attention is more frequently called to this form of trouble than to the other, and possibly more frequently than to all others connected with the scrotal sac. Tumor from hypertrophied testicle, neoplasm and varicocyli. The general practitioner will frequently be called upon to give an opinion and in diagnosis. Is it an enlarged hypertrophied testicle or hydrocele, water in the scrotum?

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The differential diagnosis is usually not difficult to make in such cases, especially so to the experienced practitioner. To the novice and inexperienced I can only enjoin caution. The operation of tapping and drawing off the fluid is simple enough if we but follow the text books as to the relation of the testicle to the tunica vaginalis. A large-sized hypodermic needle will usually do the work, both in diagnostic means and temporary relief; or, as I usually practice in these cases, a sharp-pointed, narrow-bladed bistory may be thrust in until the sac is reached and punctured. The blade may then be rotated a quarter turn until it occupies the transverse of the incision, when the flow will be free and continuous, until the fluid is all discharged. This, you all know, is but a temporary relief, as only a minimum part of cases so treated will result in a permanent cure; so that we are called upon to advise as to a radical cure; for seldom will our patient's mind be at rest under the dread of a life of such embarrassment, the mental strain often telling upon the physical and moral equilibrium.

There is no part of my subject that affords me more assurance of being in the right than that of declaring myself against the dangerous—saying nothing about the unscientific—practice of styletting or tapping and injecting into the sac the tincture of iodine. I have frequently been called upon to treat patients, the victims of such means, and some of them have been quite serious in their results; whilst in quite a number that I have known no benefits were derived; and of those cured of the hydrocele a large per cent. have suffered unjustifiably. One case that I shall report in full sustained, first, the loss of function, and finally, as a relief from prolonged suffering, the testicle had to be removed. The operation of laying the sac open by free incision is not only the surest line of procedure as looking to a radical cure, but far the safer against complications; not only in the treatment by the new method of asepsis and dissection of the walls of the tunical vaginalis with careful closure by buried sutures, etc., but in the open treatment as well, looking to the process of healing by granulations and the puckering consequent of cicatrization.

I can safely assert here, basing judgment upon a long experience in clinical observations of this class of wounds, that they will close

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with far more contraction and puckering in shortening of the subcutaneous tissue than where the skin is stitched over; and they are only equalled in this particular by a most careful and thorough suturing with deep buried stitches, like a seamstress' draw string—as I shall try to describe to you.

Leaving all this detail out of reckoning, suffice it to say that the scrotum, which is necessarily in excess from stretching in all such cases, is not materially shortened by the irritants injected into the sac; not enough so, at all events, as to serve its normal use as a physiological support to the testicle. Herein alone, if for no other reason, I should practice and advise the free incision in laying open the tunic and dissecting away of a large part of the loose scrotal tissue; and where the parts are to be closely adjusted by suturing, the parietal wall of the tunica vaginalis should be excised in a large part.

I formerly practiced, with satisfactory results, the cutting away of about one-half or two-thirds of the superabundant scrotum without any resection of the tunic, making a free incision into it, stitched the edges of the skin together, so as to make as small an external wound as practicable and then introduced a good-sized tent; later a piece of surgical gauze, packing the opening well down into the tunic. The packing was removed about the second day after the operation and the wound allowed to close by granulation from the bottom, assisting the closure by strapping to a gradual approximation.

I have never, in these cases so treated, seen the lest tendency to secondary trouble of any character ,and believe that the practice is perfectly safe, and, if any difference, less liable to secondary trouble —abscess, etc.—than ordinarily where the skin wound is closely adjusted. The careful technique, so popular just now and herein approved of, makes a wound of minimum danger in secondary causes, and is a most gratifying thing to witness, as I have had the pleasure of experiencing in several cases recently in my private home for surgical cases. There was no swelling or inflammatory action taken on at all, the wound presenting a mere cicatrical line on first exposure, the fifth day after the operation. In one instance the dressing by accident was displaced on the third day and the wound appeared perfectly healed, though I redressed as a precautionary measure and left the dressing on for a few days longer. There was no

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delay in healing or other apparent trouble following. My method of closing the wound in this class of cases is simply with a view to contracting the wound surface by a thorough puckering with long buried stitches. A half-curved needle is armed, say with a medium-sized cat-gut ligature of sufficient length to complete the work in hand. I start by taking a deep stitch, entering the needle at about a line beneath the edge of the skin and carry it toward the center of the wound, then out and across to the other side, leaving a half inch or such matter of space between the point of exit and that of reinsertion; I now make another deep, long stitch in the circling line of the wound area, and cut one, two or more to a complete circle, then traveresly across to the opposite side; then another in the circling line and across again alternately. As I proceed further and further from the center, the circle increasing, as it will with each additional tier of stitches, I make two or more circling, then a transverse, and then again proceeding in the same direction around and around until the edge of the skin is approached, when I make a line over and over or in and out, first on one side, then on the other, in a straight line of approximating the edges of the skin, as in the Harsler silver wire, runing suture, but at the distance of a line or so beneath the cut edges of the skin. It should be so arranged that the last line or row of approximating sutures should end at or near the free end of the suture at the point of commencement. Now, by taking hold of the two free ends of the string, with proper effort in steady pulling, the surface of your wound will not only be coapted but through the puckering of the surfaces and the hold within the stitches a sufficient amount of pressure will be brought upon the tissues so as to insure against oozing or bleeding from the smaller vessels and at the same time, owing to the nature of the animal suture used, not possibly interfere with the process of repair. I now complete the operation by dressing the wound with compresses of iodoform gauze, held securely in place by straps of adhesive plaster, extending from the perineum over the covering of gauze and on around the pelvis figure of eight, with shorter strips on both sides, strapping the scrotum in a firm and even support.

My first case of resection for the radical cure of varicocle was done in 1870, from which date I can lay claim to priority, so far as

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I know, in this particular line of practice. I have since only modified or tried to improve upon the management of these cases as to the preventing of secondary hemorrhage and securing union by first intention; otherwise the operation is much the same. The dissection was made in the first cases with the same care as to thoroughness as now, and with equally as good final results.

I might briefly add that my operations for hydrocele were done much in the same way then as here advocated, only as to the resection of a part of the tunica vaginalis. Formerly I packed the wound with a view to its closure by granulation from the bottom; whilst now I close and treat it in every respect as I have described above with satisfactory results.

I made an operation four years ago in a case of pendulous scrotum with slight varicocle in which I merely dissected away a large part of the scrotal skin on the affected side, trusting to absorption or contraction of the vessel's walls from pressure, and physiological support to the flabby testicle and elongated cord. There has up to the present time been no increase in the varicocity—possibly some diminution—but the improvement in general health and ruggedness of my patient has been most marked and highly gratifying to all parties concerned. The general improvement in this case was very nearly, if not quite, as marked as in others where the veins were excised. This operation was done under the analgesic effect of the sulphate of cocaine hypodermically. The patient was my only assistant, holding the parts steady and on the stretch while I cut. This was done at a time early in the history of such means—local anaesthesia—under the confidence and enthusiasm incident to the usual laudation of a newly discovered remedy. I was so charmed with its effects in this instance, as well as a number of others of like experiences in minor operations, that I was led to declare it the greatest of all boons to suffering humanity and a cause for more pride in my profession than I had ever before realized. But, alas, for human judgment! I was soon doomed to not only a sad disappointment and humiliation, but a terrible fright, such as I had never before dreamed of as even a possibility, resulting in my only failure in an operation of this kind. The history of a number of fatal cases from cocaine, cited by my assistant while on our way to make the

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operation caused me to feel more than a usual amount of responsibility about the use of it in this particular case, the patient being a very promising son of a man of much note. I gave a free inhibition of whisky and then cautiously used the syringe in spraying the tissues of the field of operation with a 2 per cent. solution of the sulphate of cocaine. My first incision, which extended through the integument for the removal of the segment of superfluous skin, caused no pain of discomfort to my patient, but as I proceeded to dissect deeper in exposing the enlarged veins, he cried out with pain, which he located in the lumbar regions, accompanied with evidence of shock; the countenance pale, features haggard, denoting great distress and anguish. I was most thoroughly frightened and hastening to complete the operation, I cut out a section of about half an inch of the trunk of the enlarged and thickened vein. I then secured against bleeding by ligating both ends where cut with a silk ligature, leaving the ends of the ligature long and projecting from the wound. I stitched the wound with cat-gut suture, much as above described. The wound healed nicely, without the discharge of a drop of pus. On the fifth day when I removed the dressings there was but a mere line showing the point of incision. The ligature hung for some time—much too long for comfort—and the patient continued in a dissatisfied state of mind, until he finally placed himself in the hands of another surgeon, to whom I recommended him, and submitted to another operation under chloroform anaesthesia. The knot of veins was all dissected out, with good results. I now use chloroform or ether, taking ample time to do the work well, always feeling that dexterity is incumbent upon me, only secondary to thoroughness in the accomplishment of the work in hand.

I will now close this too tedious paper by reporting a case in point which fell into my hands recently after having been operated upon some six months before by a general practitioner of medicine for the radical cure of hydrocele. The case not only serves to emphasize what I have tried to teach—caution and the necessity of at least a cursory knowledge of the anatomy of the parts, but at the same time enables me to demonstrate somewhat the good results in technique through the specimen which I have preserved, showing the cicatrix of a wound closed and treated as above, as well as the

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testicle showing its crippling, with complete loss of function, through an injured epididymis and obliterated vas deferens.

N. B. Aet. 63; has suffered with hydrocele for about three years previous to June 20, 1895, when he submitted to an operation for radical cure. The operation consisted in a novel method, so far as the matter of using a hypodermic syringe and needle for the introduction of tincture of iodine, after evacuating the sac with trochar and canula. It seems, according to the patient's statement and the nature of the wound, as shown by cicatrical tissue, that the syringe needle was thrust in at the upper part of the anterior aspect of the tumor, pointing downward and backward into the filled sac. As soon as the greater part of the fluid contents of the tunic was drawn off through the canula from below, the injection by the syringe was made. This seems not to have been accompanied with much pain, nor was it followed by any particular inconvenience until the third hour after the operation. The patient was not told to keep quiet, but to go on attending to his business. (He was a retail merchant.) On the afternoon of the day of the operation he was obliged, through intense pain, to go home and go to bed, where he remained a constant sufferer for six weeks. The pain and swelling increased until the organ presented as large as a goose egg, or larger. Ice bags were used topically, with internal remedies for the relief of pain. On the eleventh day, according to the patient's statement, after the first operation, a second time the trochar was introduced, but as it would seem this time into a solid tumor, as nothing but a small quantity of blood was discharged, with the result of increased pain and suffering. After prolonged suffering, the swelling subsided, leaving a small tumor or thickening of the cord near its junction with the testicle, with constant suffering referable to these parts. Liniment, anodyne lotion and internal remedies for the relief of pain were constantly used until at the time I took him in charge—June 18. There was at this time considerable tenderness on pressure at the point of thickening on the cord at its junction with the epididymis which I am unable to define. The lower end of the vas deferens is indistinct to the touch but more easily defined above. I am led to believe that much of the pain suffered is owing to the weight of the testicles being suspended upon the injured tissue of the cord,

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owing much to the lack of support of the organ incident to the elongated flabby scrotum. Astringents externally applied have given some relief, presumably through the puckering and shortening of the scrotal skin. I advised the removal of a larger section of skin as a possible means of relief. The operation was consented to and done, as above, the healing being rapid. The wound closed by first intention and was well by the fifth day. There is some improvement as regards pain, but the relief is not sufficient to satisfy the patient's mind, and after urgent solicitation on his part and another member of the family, I consented to make another operation as an exploratory means, at least. I dissected out the whole of the cicatrical line of the first operation and removed considerable quantity of additional skin (which I here show you for inspection and study as a result of the first operation), and proceeded to dissect the parts carefully, first exposing and then thoroughly examining the nerve filiaments down well into the cicatrical tissue; not finding sufficient evidence here, I examined the vas deferens, which presents merely a fibrous line, not at all normal in appearance to the eye or finger touch. There is found a bulging tumor or cist presenting a dark, purplish appearance at the site of the epididymis, which is about all that we are able to find that appears to occupy the place of that structure. Being fully satisfied that the organ is useless, and in consideration of the desire as expressed by the patient, and at the urgent solicitation of his son, who is present, we decided to extirpate the organ. The wound is dressed as above described, with the exception of leaving a small opening for packing at the end of the stump. This operation was performed Feb. 5, just four weeks after the first one. The recovery was rapid and uneventful. The patient is able to go to his store and resume business on the ninth day after the operation, and has continued to improve in health and spirits up to the present time, with no return of the deep neuralgic pain realized before the operation. I think I am safe in saying that the injury done was through the needle entering the testicle at the epididymis. This accident being caused by the contraction of the bag in its evacuation, the needle being thrust forward through the tunic into the tissues below, with the natural results of an injection of iodine into this highly vital and important organ, which, owing to the irritation

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produced, resulted in the pain, incident to all this, with the secretion of the remaining healthy organ retained, which, no doubt, added much to it through distention of the vesicles behind the occlusion.

Now, I think we have here a typical case in showing the necessity of caution in the operating field, as well as the importance of a careful painstaking study in anatomy, attainable only in the dissecting room over a cadaver. For whilst such experiences in research extending over weeks, months and years in minute dissecting and study, may not be absolutely necessary as a sufficient guarantee against accidents of this nature; nor to enable one to do the work required fairly well—I do say here, as I have many times before had occasion to, the man who is fortified with the elements of interest in his profession, as he should be, even to the border of enthusiasm, before assuming its responsibilities, will find such preparatory work most gratifying, and ever growing in its beauties as thus revealed.

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THE ABUSE OF WATER IN SURGERY.

EDWIN WALKER, M. D., EVANSVILLE.

The art of antiseptic and aseptic surgery has advanced with the science of bacteriology. Surgical technique has changed as our knowledge of germ life has advanced. While some observers before Lister seem to have had a vague idea of the relation between wound infection and micro-organisms, to him belongs the credit of putting first the knowledge, scanty as it was, into a distinct shape and to practice antiseptic surgery. He acted on the knowledge at that time, and his failures were in a great measure due to the lack of information we now possess. He supposed the chief source of infection was from the air. Tyndall's observation seemed to prove this, consequently he bent his energies to devise a means of purifying the atmosphere.

Most of you will remember only a few years ago, when operating rooms were small and the air was laden with carbolic spray, the operators and patients were deluged with antiseptic solutions. These stood in puddles on the floor, so that one had to wear rubber boots or wooden shoes. I have seen a carbolic spray play directly in an abdominal incision for an hour. Great stress at that time was placed on the preparation of the room in which the operation was to take place. The walls were wiped down and the floors scrubbed with antiseptic solutions. Since, however, we have found that infection from the air is very little, and the number of organisms contained in it being so small that the danger is practically nil when compared with other modes of access, viz: hands, instruments, dressings and fluids used during the operation. Experiments have

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shown that even in apartments where decomposing fluids are present, as in water-closets, the number of micro-organisms in the air is very small. This knowledge has led to the abandonment of the cumbersome methods, and little by little we have evolved a simpler and more reliable technique.

Perhaps no greater change has occurred than in the use of water and antiseptic fluids. Many accidents were due to the overuse of the latter, and they were responsible more than anything else for the tardy adoption of antiseptic surgery. Many deaths were charged to the new method, which were due to the ignorance of principles and the excessive uses of poisonous agents. This subject has been fully discussed and the danger fully set forth by many observers, still we find surgeons who think it necessary to irrigate a clean wound or wipe it out with a sponge or gauze, moistened in some antiseptic solution. As I said before the danger of infection from the air is very slight, and if the hands of the surgeon, his instruments and sponges have been rendered strictly aseptic, the introduction of an antiseptic fluid on the wound is entirely superfluous. It has been proven that blood serum is a reliable antiseptic, which is non-irrigating and makes the very best covering for a cut surface, and it is fully able to take care of all the germs that will get into the wound from the atmosphere. The antiseptic solutions or even water, is not only unnecessary but absolutely harmful. Bichloride solutions produce superficial necrosis and any fluid more or less damages the integrity of the tissues, besides they furnish the very moisture necessary to the development of bacteria. I do not wish to dwell at any length on this branch of the subject, for I believe that most of you have long since abandoned the use of antiseptics during operations. I have referred to it, however, because recently I have seen surgeons insult a clean wound by introducing a foreign substance into it. I heard not long since that a surgeon of some prominence in this state filled wounds with proto-nuclein, thinking thereby to hasten union. It seems almost incredible that anyone would introduce dead elements to replace the living; for even if proto-nuclein does contain the corpuscular elements, they certainly could not be as reliable as the fresh blood itself.

It is especially with regard to the use of water that I want to

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speak. Most surgeons have within the last few years much curtailed its use. Landerer, in 1889, recommended sponging with dry bichloride gauze and packing the wound carefully to control hemorrhage and remove all surplus blood, so that the wound would be dry when it was time to close it. The dry method has been adopted partially at least, by most surgeons, and is considered by all a marked advance. Few, however, fully appreciate the extent it should be applied, and many operators use too much fluid, too much irrigation, and too much wet sponging. In most recent articles I find irrigation recommended after many operations, which in my experience would have done better without, and it is my best judgment we will have much better results when we abandon irrigation except in those cases where, mechanically, it is impossible to remove foreign substance or aseptic material in any other way, and those cases will become gradually less as we apply efficient means of drainage, and keep the parts dry afterward.

The first objection I would make against water, is, that as ordinarily obtained it is not sterile. When emergency operations are undertaken, boiled water is rarely at hand, and if it is, it has to be cooled with water that has not been boiled. Washing the wound with water that is sterilized is a hazardous proceeding and is liable to carry more infection in than it washes out. The following, taken from Warren's pathology, page 787, fully explains the idea: "A cubic meter of air may contain from 1,000 to 20,000 germs, but in a drop of putrefying fluid, millions of bacteria may exist. Schimmelbusch reckons that the number of germs that settle upon a space a decimetre square, amounts to about sixty or seventy during one-half hour's time, in Bergmann's operating theatre. In a cubic centimetre of water of the river Spree, which flows past the clinic, it is estimated that there exists about 27,000 germs. Assuming, now, that a boatman should injure his hand, and should wait half an hour in the clinic before it was dressed, he would receive upon the surface of the wound, covered probably with blood clot, between sixty and seventy bacteria. If, however, he undertook to 'cleanse' the wound in the Spree water and to bind it with a dirty handkerchief, the number of organisms that would come in contact with the wound would amount probably to between thirty and forty millions."

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I know it will be argued that water is easily sterilized by boiling, but unfortunately we usually have to delegate that part of the work to some one who is uneducated in aseptic methods. Who of us has not in our haste, after carefully boiling the water, found it too hot for use, cooled it with plain water, and then to ease one's conscience a few bichloride tablets are dropped into it; or having directed some one to get the water ready, seen the temperature tested with a dirty hand being put into it, or have it brought in a vessel which has been in service in every branch of household life. It is practically impossible even with trained help, under the most favorable circumstances, to obtain absolute asepsis, and when that part of the work devolves on those who are not especially trained, it is sure to fail.

To test this subject I had three trained nurses prepare three pitchers of water, telling them that it was to be used for an operation. They each washed out a pitcher with sapolio and scalded it with boiling water, then after boiling the water thoroughly for one-half an hour, poured it into the pitcher, and covered it carefully with a clean towel. The result of a bacteriological examination by Dr. Kerth, showed germs in two of them, while one was sterile.

If we have prepared our hands and instruments and the skin of the patient properly, in any clean operation, dry sponging with sterilized gauze will remove all blood and render the wound dry and clean. Blood clots and the tissue which may be cut loose, can be removed without one drop of moisture, and my experience has been that these wounds will heal more kindly and are less frequently infected than where water is used.

Thus far I have only spoken of clean wounds, but I believe the same is true of infected wounds and in cavities, mucous and serous, where infection exists prior to the operation. I do not speak dogmatically, because sufficient experience has not been collected to fully establish it, but so far as my observation goes, dry sponging has been more efficient than irrigation. I do not include in this assertion cavities, sinuses, etc., which mechanically are almost impossible to clean without water. When this is the case, after thoroughly washing, the parts should be dried and efficient drainage established and dry methods employed afterward.

In operations in the uterine cavity the same general rules should

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be followed. After curetting for endometretis or removal of the products of conception before the third month when not infected, I never irrigate. Since abandoning washing out with antiseptic fluids my cases have done much better. The packing remains sweeter and the discharge following is less. Twice in the past year I have been compelled to empty the uterus at the second month for vomiting. (I may add by way of parenthesis, that they were the only two cases I have ever had to resort to this measure). In both, the os was dilated by steel instruments, and with the curette and Martin's forceps, the foetus and membranes were removed, the cavity wiped out with sterilized gauze and packed with iodoform gauze. This was done, of course, under strict aseptic precautions. In neither case did the temperature rise to a hundred, nor was the pulse at any time above normal. After the third month, and where infection has occurred, it may be better to irrigate in some cases, on account of the difficulty of removing all foreign matter without it. I have, however, treated a large number of this class entirely by the dry method with most satisfactory results.

It is possible, rapidly and thoroughly, to remove all debris even in quite a large uterus with the finger, a dull curette, and curetting forceps. I have not had the accidents so often spoken of in this connection, due to instrumental interference. The unfavorable sequences (pelvic inflamation, etc.) are often due, I think, to the forcing of pus through the tubes by irrigation. I have known peritonitis to follow irrigation of the uterus, several times. I am very partial to the use of Martin's heavy forceps in these cases. With them the uterus can be more rapidly emptied than by the curette alone, and in many cases they are more efficient that the currette or fingers. I have never had any unfavorable results from them. So far, I have not treated the infected puerperal uterus by the dry method, nor has it to my knowledge been employed by any one, but it has been so successful in my hands in smaller infected uteri that I shall try it the next case I have to treat.

Formerly I performed operations on the cervix, vagina and external genitals under constant irrigation with antiseptic solutions, and later with sterilized water, as was the general custom. The later work on gynaecology (Keating & Coe) recommends it. Since

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adopting the dry methods my results have been much more satisfactory. So much so that I have entirely abandoned irrigation in all operations on the genital tract. No water, not even a moist sponge, is used. I, of course, use irrigation to cleanse the parts before the operation, but after the first cut, not a drop of water is used.

Irrigation in the abdominal cavity, while still employed by many operators, has been entirely abandoned by a large number. It seems impossible to wash out with any degree of thoroughness the abdominal cavity. In aseptic cases it is certainly superfluous, and in pus cases the careful protection of the cavity by gauze, and wiping out with the same material, has been more satisfactory in the hands of many. Careful, thorough work renders irrigation superfluous except in rare instances. The dry method seems to be more rational and in my experience has been attended with better results. This method possesses great advantages to the surgeon who does much of his work in the patients' homes. He can pack his grip with everything he needs thoroughly sterilized, and after he has disinfected his hands, use absolutely nothing on the premises. When I go from home to perform surgical operations, I take everything I need, except the water to wash my hands, and I think by this method I exclude many avenues of infection. If antiseptics or water are used, it adds that many more chances of trouble. The instruments should not be immersed in any fluids for the same reason. Simplicity all along the line is the watchword, and every additional detail may furnish a loop-hole for the entrance of the enemy.

I might go on and detail many other conditions in which I have found the dry method useful, but that would prolong this article beyond its limits. A fair trial will convince any surgeon of the superiority of the dry method.

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ETIOLOGY OF DISEASES PECULIAR TO WOMEN.

MARTHA J. SMITH, M. D., INDIANAPOLIS.

The object of this paper is to bring before you the most frequent cases of diseases peculiar to women, which come under one's daily observation, and which are, to a great degree, avoidable. I shall discuss the habits and influences, which deteriorate her power of endurance and diminish her capacity for resisting disease. Observation proves that women not exposed to degenerating influences can compete in strength and endurance with men of their race, and in some savage nations they are regarded as superior to them.

The truth of this statement is now being verified by the Cuban Amazons, who are taking a prominent part in the fights between the insurgents and the Spanish troops. These women, many of whom have husbands in the ranks of the Cuban army, have exhibited on frequent occasions, courage, endurance and fighting skill, to a greater extent than many of the men.

These women are not as a rule remarkable for personal beauty or cleanliness, but they are strong of limb, vigorous in action, and can use a rifle, revolver, or knife, with the best of the men; and whenever there is any fighting to do they go into the thick of it with energy and dash.

In the lower order of animals this equality in the female is still more marked. From such facts we can readily see that if women were properly developed, and placed beyond causes which interfere with their physical well being, they would be in no great degree inferior to man.

There are two periods in the life of women, in which they are

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peculiarly susceptible to morbid influences, which, if not removed, will almost surely produce either structural or functional diseases, oftimes both, viz: Puberty and Menopause.

One of the most frequent diseases appearing at the age of pubescence, is anemia, which oftimes prevents the appearance of the menses at the usual age, and gives rise to grave forebodings upon the part of the mother and frequently leads to unwise attempts to force the establishment of the menstrual function.

Amenorrhoea, during menstrual life, although treated of in most of our gynaecological works as a separate disease, is in all cases, a mere symptom of disease, either constitutional or local, as an indication of the absence or a rudimentary state of the uterus or ovaries at pregnancy. Among the most frequent constitutional diseases that produce amenorrhoea in young girls and unmarried women are anemia and chlorosis, and these may be produced by a long siege of sickness of any kind that destroys or impairs digestion and assimilation. Less frequently in our country, they are produced among the poor by insufficient food and clothing and long hours of toil.

The most frequent local causes that produce cessation of the menses are as follows, viz: Occlusion of the uterus or vagina, atrophy of the uterus, atrophy of both ovaries, cystic degeneration of the ovaries, pelvic peritonitis and anteflection of the uterus.

The cervical canal may be congenitally or accidentally closed and the vagina may be occluded from congenital or acquired atresia.

There is a condition of the nervous system called by Dr. Hodge, of Philadelphia, "sedation," and by Dr. Thomas, "Atony of the Nervous System," that sometimes causes cessation of the menses. It consists in a decrease of the excitability, vigor and activity of the nervous agency which controls the functions of different organs and has for its cause physical and moral influences, such as mental depression, indolence and luxury, want of fresh air and exercise, etc.

It is a very common thing to hear a physician say: "I have a case of dysmenorrhoea which is giving me a great deal of trouble and nothing seems to do it any good." Probably it has never occurred to him that dysmenorrhoea, like amenorrhoea, is only a symptom of disease and may be produced by several separate and

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distinct causes, and the treatment must be directed to the removal of the cause.

Any condition affecting the structure of the uterine walls, or its appendages, or the peri-uterine structures, making the nerves supplying these parts morbidly sensitive, will produce pain at the beginning of the menstrual flow, while anything producing obstruction to the flow, such as stenosis of the cervical canal, flexions, etc., may produce pain during the entire period.

The desire to render girls accomplished at all hazards has originated a system of forced mental training which greatly increases the irritability of the brain and nervous system, while at the same time sedentary occupations are followed to the exclusion of any active exercise out of doors. This powerful influence on the nervous system and especially on the reproductive system is quite frequently overlooked.

No amount of mental training or degree of mental development will fit a woman for the physical duties of a wife and mother, or render her capable of bearing children competent to resist the inroads of disease.

The woman who neglects physical exercise is peculiarly susceptible to uterine and ovarian trouble at the menstrual period. Exposure to severe cold during menstruation without adequate protection from warm clothing is liable to produce inflammation of the mucous membrane of the uterus. Such an inflammation once excited will oftentimes continue for years, and in time end in interstitial metritis, entailing in its progress dysmenorrhoea, sterility, pelvic pain, gastric disorders and impaired digestion and nutrition. Cases of pelvic peritonitis sometimes develop at this trying period of congestion and nervous exaltation.

The menopause is that period in a woman's life during which the menstral function is gradually abolished through atrophy of the uterus and ovaries. It has been called the "critical period" because certain diseases, as cancer of the uterus, are more likely to occur at this period than at any other time, and diseases already existing are liable to be aggravated. There is a widespread belief among women that the "change of life" is necessarily accompanied with many distressing symptoms, which will cease when the change is

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fully accomplished and not before. This erroneous belief is too frequently fostered by physicians, and has caused many a woman to refuse medical consultation until disease has advanced too far to be amenable to the physician's art. The menopause is a physiological process, and a woman whose general health is good, and who has no disease of the reproductive organs, will pass through this period with almost uninterrupted physical comfort.

The most distressing and the most fatal malady, to which women are subject at this period of life, is cancer of the uterus, and so stealthy and insidious is its approach, that many women pass beyond hope of cure before they experience any serious or alarming symptoms.

Women should be taught by their physicians that the menopause is not necessarily accompanied by pelvic pain or uterine discharge of any kind; on the contrary, such symptoms are indicative of disease and should be carefully inquired into. They should be taught that pain is not present in the first stage of uterine cancer, and that it is only when the disease has advanced to a hopeless stage that it produces pain.

Every woman who has borne children should submit to frequent pelvic examinations while passing through the menopause in order that cancer may be detected in its early stage and early operation resorted to, for its cure. If this rule were generally adopted, it would result in the saving of many precious lives that are otherwise doomed to a horrible death.

Constipation is a fruitful factor in the production of general as well as local diseases, and frequently aids in the production, if it is not a direct cause, for displacements. The full bowel resting upon the body of the uterus will aid in the production of flexions and versions, and, in conjunction with other causes may produce pelvic inflammation, and certainly it aggravates whatever disease may be present in the pelvis.

After the expulsion of the embryo, either at full time or at any period of pregnancy, the muscular structure of the uterus undergoes fatty degeneration and absorption, which has received the name of involution. The process occurs rapidly after abortion, but after labor at terms it requires six weeks under the most favorable influ-

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ences for its accomplishment. In order that involution may proceed with normal rapidity and certainty perfect rest is essential. The woman who, after parturition, resumes her usual occupation before the completion of involution, invites subinvolution and displacements of the uterus and its appendages, and a general relaxation of the pelvic tissues, the occurance of which will render her an invalid for months or for years, perhaps for life.

It is now universally recognized that lacerations of the pelvic floor are the chief cause of cystocele, rectocele and prolapsus uteri; and a large proportion of cases that consult the gynecologist are suffering from diseases that might have been prevented, if the obstetrician had not neglected one of his most obvious duties, viz., the early repair of lacerations.

Lacerations of the cervix uteri are in some cases important factors in uterine pathology, but in many cases in which their existence is recognized by inspection they produce no evil results whatever.

Dr. T. A. Emmet first recognized the significance of the lesion and taught us how to repair it, and yet there are few who believe his statement that "at least one-half of the ailments among those who have borne children are to be attributed to lacerations of the cervix."

That they do occasionally produce subinvolution, hypertrophy of the cervix, undergoes cystic degeneration, produce sterility, dysmenorrhoea, etc., there can be no doubt, and the frequency with which cancer of the cervix appears upon the site of an old laceration is significant.

But after cervical lacerations have been given due credit for all the mischief they are capable of doing, the fact remains that many times they have been wrongfully accused and as a result, the operation of trachelorrhaphy has been greatly overdone.

That criminal abortion constitutes a prolific cause of many diseases of the uterus and its appendages, no one engaged in the practice of medicine can for a moment doubt.

Dr. P. F. Chambers, of New York, says: In his experience the most frequent cause of pelvic trouble among married women is abortions, and in the majority of cases abortion artificially or inten-

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tionally produced. Dr. Grandin says he is satisfied that fully 50 per cent. of the pelvic troubles of women could be traced to improperly treated abortions.

Dr. William M. Polk says, abortions are the most common cause of disease of the appendages.

Dr. Andrew F. Currier says, the production of criminal abortion is probably responsible for more of the serious diseases which affect the pelvic viscera of women than any other cause.

When we consider the vast multitude of women who habitually resort to the criminal abortionist to be relieved from the responsibility and inconvenience of child-bearing, the wonder is that the crude and dangerous methods by which the act is usually committed, does not produce more chronic invalidism than superficial observation would lead one to suppose.

Specific vaginitis is one of the most frequent causes of pelvic and peritoneal inflammation. Many authors place it in percentage next to abortion and puerperal sepsis, but the frequency of this disease probably depends upon the character of the population in each particular community.

The investigation of Noeggerath and the teachings of Tait, have thrown a flood of light upon this subject. The fact is that until Tait opened up the realms of abdominal surgery, and revealed the true character of the inflammatory diseases of the pelvic organs, very little was positively known of the ravages produced by this disease.

Dr. H. W. Longyear, of Detroit, Mich., says, that latent specific vaginitis produces more cases of pelvic inflammation requiring coeliotomy among women of the upper classes than any other cause. There was a time when this disease was thought to be of little importance, but it is now known to be a terrible and oftentimes a fatal scourge among women.

This mismanagement of the third stage of labor I believe to be one of the most fruitful causes of diseases of the reproductive organs. Undue haste in the delivery of the placenta is almost sure to result in leaving fragments of the secudines within the uterus, which may, and sometimes do, become the source of both present and future trouble. Dr. W. D. Porter, of Cincinnati, in an article on the "Third

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Stage of Labor," says: "Efforts at expulsion of the placenta previous to its detachment are clearly wrong."

About twenty years ago Crede published his method of delivering the placenta, a procedure familiar to us all. Suffice it to say, that it has been grossly abused to the lasting detriment of a large proportion of women, who have been subjected to it too soon after the completion of the second stage of labor. The method scientifically applied, at the proper time, is a very safe and efficient one. Many physicians, heedless of the results that may be produced by interfering too soon, deliver the placenta before the uterus has regained its impaired contractibility, caused by the long and oftentimes violent contractions of the uterus that finally result in the expulsion of the child. The probable results of undue haste in this most important part of the physician's duty, is the retention within the uterus of placental and membranous fragments, which not only cause frequent recurring post partum pains, that fret and worry the patient, destroying her rest and protracting her convalescence, but frequently become the source of sepsis, which, if it does not end fatally, is almost sure to cause subinvolution, chronic endometritis, metritis, salpingitis, peritonitis, displacements, etc.

Dr. Frank C. Ferguson, in an article published in the Indiana Medical Journal of 1891, sums up the matter as follows: "The complications of incomplete abortions and the retention of fragments of secundines after labor are primary and secondary. The principal primary complications are: (1) Post partem hemorrhage. (2) Septicemia. (3) Pyemia. (4) Acute Puerperal Metritis. (5) Lymphangitis.

Should the patient happily escape those dangerous diseases, the principal secondary complications to which she may be subjected are: (1) Subinvolution. (2) Prolapsus. (3) Versions and Flexions. (4) Long continued recurring Metrorrhagia and Menorrhagia, which sooner or later produce profound anemia, leading oftentimes to the development of tuberculosis or other maladies."

I have not attempted to enumerate all the causes that contribute to the ill health of women, but have spoken chiefly of the most prominent causes, and those which are to a very large extent preventable.

When proper attention is given to the physical training and

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education of our girls at the time of puberty; when a radical change is made in the social life of the wealthy; when women are thoroughly instructed concerning the evil results of improper dressing, the ill effects of constipation and the terrible results of criminal abortion, and when physicians are universally held responsible for ill health produced by the accidents of parturition, the mismanagement of labor and the lying-in period, diseases peculiar to women will be far less prevalent than they now are.

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DIFFUSE PELVIC INFLAMMATION.

L. H. DUNNING, M. D., INDIANAPOLIS.

Diffuse pelvic inflammation is a complex disease, involving in an inflammatory process tissues of widely different histological structure, viz: The endometrium, Fallopian tubes, ovaries, pelvic peritoneum, pelvic cellular tissue, and the lymphatics of the pelvic region. It may also involve in the morbid process, to a greater or less extent, the serous coats of all the small intestines and the lower portion of the omentum. This latter occurence is, however, incidental and a complication.

The starting point of the disease is, as a rule, inflammation of the endometrium. From the endometrium the inflammation may spread onward.

(a) By contiguity of structure into the deeper tissues of the uterus, penetrating them and reaching in its progress the tissues around the uterus in the following order, viz: The cellular tissues, ovaries, pelvic peritoneum, and the Fallopian tubes. This is the method of development in some cases of puerperal metritis and perimetritis dependent upon septic infection.

(b) The disease may begin as an inflammation of the endometrium and spread by continuity of structure onward into the Fallopian tubes and thence onward to the ovaries, pelvic peritoneum and cellular tissue. This is the typical manner in which the disease reaches its full development in the cases gonorrheal infection induces.

(c) The inflammation may find its way to the structures beyond the uterus in consequence of an absorption of the septic material by

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the lymphatics, which septic matter may be carried onward to the pelvic cellular tissues or to the ovaries. In this case most frequently an acute ovaritis arises and forms a new focus of disease, from whence the inflammation spreads to other pelvic tissues. If the ovaritis be not violently septic in character only a localized peritonitis will result.

(d) In a limited number of cases the ovaries become involved in inflammation as a result of metastasis. As in the former case the inflammation may spread to other tissues.

(e) The endometrium, or more frequently the mucous membrane of the Fallopian tube, may be primarily infected by the tubercular bacillus. An inflammation arises and spreads. In this form it is seldom that the pelvic peritoneum escapes infection.

(f) In some instances the inflammation may find its starting point in the pelvic peritoneum, the inflammation being induced by the irritating contact of fluids from ruptured ovarian or parovarian cysts; or effused blood in case of ruptured ectopic gestation or extension of the inflammation in cases of perityphlitis. The traumatism of subperitoneal fibroid tumors of the uterus may give rise to pelvic peritonitis, and from thence the inflammation may spread to other tissues.

The disease is almost universally of microbic origin. Viewing it from a clinical standpoint we will find the chief etiological factors in puerperal and gonorrheal infection, in infection from impure contact, such as of dirty fingers, instruments and tents; in traumatism, contracting colds during menstruation, tubercular infection, the contact of irritating fluids, such as those from ruptured cysts or ectopic gestation, the extension of the inflammation in perityphilitis, the rupture of an appendicial abscess, traumatism during an abdominal section, and introduction of septic material into the pelvic cavity at the time of acoeliotomy.

I will not attempt further discussion of the modus operandi of the development of the disease from these causes; time will not permit. Only the mild cases are produced by contracting cold. The severe forms of septic infection resulting in puerperal septicaemia should be excluded from the class. It is the mild form of septic infection that induces the disease we are discussing. It is most fre-

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quently encountered after abortions. One of the most characteristic features of the disease is the tendency to recur. The following history well illustrates many of the clinical phenomena of a case occurring after an abortion: Mrs. A., age 26, presented herself at one of my clinics, stating that she had been ill since an abortion which occurred five years ago. After the abortion she lay in bed nine days, was then around the house a few days, when she became ill of some inflammatory disease which confined her to bed several weeks. She finally improved so as to be able to again go about her home, but she did not fully recover, indeed she was an invalid several months. Her health then graually improved, but she has since had several attacks each year, which, though mild in character, were yet of a similar nature to the original one. These attacks would begin suddenly with a severe pain in the inguinal region. Following the pain would appear a slight chill, a high fever and great prostration. There would be much soreness in the lower and abdominal region, marked constipation and vesical tenesmus. The pain in the inguinal and hypogastric regions would persist for two or three weeks, then subside and very nearly disappear as the fever abated. The patient would then gradually improve, but sooner or later another similar attack would appear. She was just recovering from such a seizure when she presented herself at the clinic. An examination showed tenseness and soreness of the abdominal walls, a fixed, tender uterus and the characteristic induration surrounding that organ.

Here is the history of another case, showing other features of the disease: Mrs. B. was brought to the city hospital four weeks after an abortion. She had been in bed most of the time since the mishap, suffering from fever and intense pain in the hypogastrium.

An examination showed acute endometris, a fixed uterus and a collar of indurated tissue surrounding it. Two weeks later the uterus had become slightly movable, the deal-board feel had disappeared, and there was an indurated mass upon either side and posterior to the uterus.

An abodominal section was performed. The uterus was surrounded by a partially organized adventitious tissue. The masses were extirpated and found to be tubes and ovaries and newly organized tissue. These masses were situated low in the pelvis and adher-

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ent. One tube was distended by pus, and both ovaries were two or three times the normal size, the result of an acute inflammation. The broad ligaments were thickened and stiffened, and the pelvic peritoneum intensely inflamed.

It is obvious that in a disease so complex as the one we are treating, classification is difficult, and an accurate description of the multiform lesions present impossible in a short paper. It must be remembered that in consequence of the complexity of the disease a marked difference in the pathological lesions will be found in different cases; that is to say, inflammation differs in character and burns in greater intensity now in one organ and then in another, according to the leading features in each case.

The most constant lesion present is pelvic peritonitis, the next endometritis, and the third in order of frequency is salpingitis.

In the suppurative form of the disease, suppurative salpingitis is the most constant present. There are three distinct forms of the disease, viz: The serous, suppurative and tuberculous.

In this classification the first form ignores the endometritis, which is often the starting point of the disease. The pelvic peritonitis so dominates the disease in this form, that every classification expressive of the most important pathological condition must consider first of all changes occurring here.

In the serous form of the disease there is a serous oedema of the pelvic tissue and a more or less marked transudation of serum into the pelvic cavity. Encysted dropsy of the pelvic peritoneum in rare instances occurs. There will be more or less transudation of plastic lymph upon the free surfaces of the pelvic peritoneum and upon the surface of the ovary.

This lymph may be organized into adventitious tissue-forming adhesions which will bind the pelvic organs to each other or to contiguous structures. Since there is a proneness to displacement of the uterus, Fallopian tubes and ovaries in the end, these organs are frequently left fixed by adhesion in abnormal positions. The most common varieties of displacements are retro-version of the uterus and prolapsus of the tubes and ovaries. This is the most frequent form of the disease. It is prone to result in chronic inflammation, and is recurrent in type. This tendency to recurrence is

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so uniform that it is always safe to predict succeeding attacks, which will appear at varying intervals of from one to several months.

At the onset of the disease the most characteristic symptom is pain in the inguinal or hypogastric region, a slight chill, with fever, and general malaise, following in quick succession. The pain is aggravated on standing and walking. There is usually well marked headache, some nausea and vomiting. Later, vesical and rectal tenesmus are quite common symptoms. A physical examination reveals the true nature of the disease. In the early stages, say the first day, there is a marked tenderness in the lower part of the abdomen and a rigidity of the abdominal walls. A digital examination reveals oedema of the tissues surrounding the uterus, and great tenderness, especially in the ovarian regions. The uterus is very sensitive to touch and motion, but is not this early fixed. There is tension in the vaginal vault. The second day the uterus has become more or less fixed, the collar of indurated tissue can be felt, and the soreness has become so pronounced that the slightest touch induces intense suffering. The induration will continue for ten days to three weeks.

In the serous variety of the disease the uterus regains its mobility, except in those instances in which there is a considerable transudation of plastic lymph, and the formation of adhesions. As the general induration disappears, usually there will be felt irregular masses upon either side of the uterus, which masses are composed of inflamed tubes and ovaries agglutinated and adherent. In the mild cases seemingly complete recovery takes place; yet there must be a nidus left, for sooner or later there is a recurrence.

The purulent cases will possess many of the signs and symptoms already described. They will, however, present more marked symptoms, indicating the presence of a grave lesion. The pain is more persistent, the soreness greater, the fever higher and longer continued. There is serous infiltration of the affected tissues and an exudate of plastic lymph which in time becomes organized and leads to gross adhesions. The Fallopian tubes are the most common seat of the purulent process of accumulation. One or both tubes may be involved. Large tubal abscesses are usually surrounded by adventitious tissue and agglutinated intestine and omen-

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tum. In such instances the abscess is fixed, and, as a rule, low in the cul-de-sac.

A tubo-ovarian abscess is not infrequently present. When an ovarian abscess exists alone, it is in consequence of purulent infection through the medium of the lymphatics. It may be free from adhesions and movable, or it may be entirely surrounded by inflammatory products and fixed local abscess outside of the organs just mentioned; pus may extend within the folds of the broad ligament or to be encysted within the true pelvis. Sometimes these abscesses are single and sometimes multiple.

During the acute stage of a purpulent pelvic inflammation the physical signs are not usually sufficiently distinctive. After a few days the inflammation may be more localized, so that the abscess may be mapped out by the combined examination. Tubal abscesses unless unusually large, are oblong, generally lateral and fixed. Abcesses of the ovary may be single and more globular, and not so liable to be immobile. Abscesses of the broad ligament are lateral, and point between the uterus and the bladder. They furthermore push the uterus laterally and backward or upward. Simple encysted abscesses within the true pelvis are low down and fixed, while not infrequently the appendages may be palpated independently.

Diffuse-pelvic inflammation is a disease of frequent occurrence. The writer sees more cases of it than of tumors. The simple form usually ends in recovery, yet is prone to leave the organs more or less permanently impaired and adherent. The purulent form often terminates in the death of the patient, though not so frequently as believed a few years ago. The abscess may become encysted, and after a long time the pus undergoes absorption or caseation. More frequently the abscess, if left to nature, will rupture into the rectum, vagina, bladder and peritoneal cavity. In rare instances a pyosalpynx may empty spontaneously into the uterus and recovery take place.

The prophylactic treatment consists in removing the local morbid process which may give rise to the disease. In other words, cure the endometritis. In septic and gonorrheal cases this is best and most speedily accomplished by currettement and subsequent antiseptic washes and applications. Extirpate the ectopic gestation

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sac, the ovarian abscess, the tubercular tube and the fibroma of the uterus. Let the woman by sensible dressing and due care employed avoid taking cold during menstruation. As we have already stated the mild serous cases usually terminate in recovery. It is in some respects a self-limited disease, if the circumstances and surroundings of the patient be favorable.

The principles of treatment are similar. They are: Rest in bed, the avoidance of all forms of excitment, a saline purge at the onset and opium in sufficient quantities to relieve pain and subdue inflammation; hot vaginal douches two or three times a day and hot applications over the hypogastric region. As the intensity of the inflammation subsides the application of tincture of iodine to the vault of the vagina and glycerine tampons, are of value. Tonics and alteratives are beneficial. The bichloride of mercury, combined with a bitter tonic is a pleasant and efficient form to administer these. If the pain in one inguinal region persists, and there is tension of the abdominal wall, a blister will afford considerable relief. For a considerable time sexual congress, fatiguing work and exacting duties should be avoided.

The purulent cases do not pursue any definite course. If recognized at the onset the source of the infection should be sought out and if possible removed. In septic and gonorrheal cases it will be found in the uterus. We should not hesitate to gently dilate the uterus wash out its cavity and gently curette and drain with gauze.

It is true there is some risk in this procedure in acute cases, but not so much danger as there is in permitting a local focus of infection to remain. The same general principles of treatment will apply here as in the milder cases. As soon as the abscess has developed it should be extirpated or the pus evacuated by an incision through the vagina. There are many questions yet unsettled touching the best means of dealing with pus accumulations within the pelvis and pelvic organs. I cannot in this brief paper more than indicate the main points. One great question is, shall the pus accumulations be removed through an abdominal or a vaginal opening? My belief is, if the abscess is localized and movable it should be reached from above and extirpated. By this means the writer has operated on more than one hundred cases in which there were pus

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accumulations in the pelvis, and in but three instances has he been unable to remove the pus sac. In the exceptional cases the abscess walls were stitched to the abdominal incision, and the cavity drained by a tube from above. Out of the total number but six deaths occurred A few of the patients were left with fistulous tracts leading from the abdominal walls down into the pelvic cavity. In five or six in which drainage tubes were used ventral hernia resulted. Quite a number had post-climactric endometritis. Taken as a whole the results have been very gratifying.

When the abscess is moderately large, and lies near the vaginal vault, or is in the cul-de-sac or within the broad ligament, and is immovable, it has been my custom for several years to make a free opening into the abscess through the vagina. The opening should be large, so that a large-sized drainage tube may be inserted and the cavity irrigated and freely drained. This method has yielded gratifying results in the class of cases I have mentioned, but it must be remembered that often the abscesses may be, and not infrequently are, multiple, so that a single opening will not suffice to cure. This is especially true in tubal abscesses. It should be remembered, too, that in tuberculous cases simple drainage of the abscess is not sufficient to effect a cure. The infected tissues remain to perpetuate the discharge of pus through a fistulous opening; so that it will be seen that simple incision and drainage from below has but a limited range of applicability.

Of late, under the leadership of the French school for surgeons, much interest and activity have been shown in the direction of operating upon all suppurating cases by vaginal hysterotomy and excision of the whole or a part of the abscess walls. The advantages urged as accruing from this procedure are that by it a hopelessly diseased uterus is removed, a better view of diseased structures is obtained, and hence, more satisfactory work done, and further, that better drainage is established. It is claimed, too, that the patients make a more satisfactory recovery, are saved the unsightly abdominal scar, the annoyances and danger of a ventral hernia and fistulous attacks. These claims are all disputed by many eminent abdominal surgeons. The scrutinizing and unbiased study of the facts relating to the immediate and remote effects produced

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by the different operations in a large number of cases must be invoked to aid in settling this perplexing question.

In this discussion which is raging and being engaged in with considerable vigor on both sides, the advocates of the vaginal method are the aggressors because theirs is the newer method. They seem to forget the fact that many obstacles and some distressing sequelae will attend and follow all major operations. Their methods may, and probably will, show quite as many difficulties and sequelae when a sufficient number of cases have accumulated to enable us to form a just estimate of its advantages and disadvantages.

It is not my purpose to present all the arguments, pro and con, but I wish to state a few impressions that have been forced upon me in a limited experience confined to five cases in which vaginal hysterectomy has been done for inflammatory diseases of the uterus and its appendages.

1. In all my cases, except one, the uterus on removal was not found to be markedly diseased beyond a glandular endometris.

2. In the two cases in which the uterus and appendages were fixed the operation was most difficult. The uterus in either case was little diseased. The chief pathological lesions were double pyosalpinx and pelvic peritonitis. The operation would have been easy and the result quite as good by the abdominal method.

3. In these cases the appendages were much more inaccessible and less open to ocular inspection than in the abdominal operation.

4. In my experience in clamp cases the pain after vaginal hysterectomy is greater the first two days than often after celiotomy.

5. Systemic disturbances as evidenced by the temperature and pulse does not vary much in the two methods. The temperature after vaginal hysterectomy is lower the first three or four days but is higher after six to ten days, when the sloughs begin to come away.

6. In two cases in which ligatures were employed instead of clamps, abscesses in the stump of the broad ligament followed, retarding the recovery of the patients. Many cases of abdominal section were done in the hospital during the same time, and in none of them did abscesses appear.

7. In one case of the five some prolapsus of the vaginal walls

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appeared a few weeks after the patient began walking around. This was a ligature case. Such a prolapsus I have never witnessed in a forceps case.

8. In three of the cases the same pain and nervousness followed the recovery as we sometimes witness in abdominal section. In two of these cases the pain and nervousness passed off after several weeks as it usually does after abdominal section.

I would call your attention to the fact that such statements as I have made in the above conclusions are not such as usually appear in the list of reported cases. These are, however, such as frequently exist in patients whose cases are reported as cured. The operations were only done in grave cases to save life or rescue the patients from chronic invalidism, and the ills I have mentioned were deemed by the patients as of small importance in comparison to the greater ills from which the operation relieved them. We have not exhausted the subject of the treatment of diffuse pelvic inflammation, nor indeed can we hope to in a single discussion.

A burning question is, what shall we do for patients in whom the inflammation has spent its force, yet has left them with displaced and adherent uteri and appendages? They suffer more or less pain, are sterile, can not endure wifely relations, and all are invalids in a lower or higher degree.

Four plans of treatment are in vogue, and should, I think, be employed in the order mentioned:

First. The attempt to gradually loosen and replace the organs by gentle yet firm manipulation and tamponading.

Second. Massage by the Brandt method.

Third. Under anesthesia the employment of Shultz's method of overcoming adhesions and restoration of the organs to the normal position.

Fourth, and lastly, in case of failure of preceding methods, the employment of abdominal section, breaking up of adhesions, removal of the appendages if markedly diseased, and ventrofixation or shortening of the round or broad ligaments if retroversion exists.

In all cases where it exists endometritis should be cured, and in mild cases, attended by marked pain without suppuration, galvanism will be found of value.

249 North Alabama Street.

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PERINEORRHAPHY AND PERINEOPLASTY.

HERMAN A. DUEMLING, M. D., FORT WAYNE.

The anatomical term "Perineum" is a name given to the various structures which form the floor of the pelvic outlet in both the male and the female. Its importance is great, and especially so in the female. If we study the surgical relations of the perineum and the parts in its immediate neighborhood, we find that it not only closes the outlet of the pelvis, but, and this seems to be its main function, it serves as a support to structures of vast importance. The uterus, though held in its position by its ligaments, gets its main support from the perineum. Cystocele and rectocele are only found when the perineum is defective. The normal perineum is a pyramidal body with its base directed downward and its apex resting between the anterior wall of the rectum and the posterior wall of the vagina in front of the female subject. In order to clearly understand the nature of injuries to the pelvic floor, we must recall to memory its construction and at the same time we will more clearly understand the important and varied pathological conditions dependent on its integrity.

The levator ani muscle is the most extensively attached muscle in the perineum and takes up the greater part of the space. The transversus perinei, coccygeus, and the bulbo-cavernosus fill out the space left by the levator ani. All these muscles blend intimately by their fibres, in fact the bulbo-cavernosus and the levator may be considered as one, as their action is the same. One muscle, which has not been enumerated, but is of vast importance to the surgeon, is the sphincter ani. This muscle arises from the end of the coccyx and encircles the rectum, some of its fibres being inserted into the skin.

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Thus the perineal muscles form a diaphragm in the pelvic floor.

If this diaphragm be disturbed, displacement of the pelvic viscera will occur. It is held by some, that the perineum has very little to do with the support of the pelvic organs, and they argue, that, after removal of the pelvic floor there is no prolapsus of its contents. This is a very fallacious statement. It is true that no immediate displacement occurs, as the organs retain their correct relationships for a time; furthermore the pelvic organs may be held in place by adhesive inflammation, or where the torn muscles retract and draw together the orifice of the vagina and thus give the lost support to the pelvic organs. These last-named conditions, however, do not unfortunately occur with any degree of regularity and the result is, that after the perineum is destroyed, gradual prolapsus uteri, rectocele and cystocele will inevitably result. Another condition, which the observer must not overlook, is this: The perineum may be torn and yet no external manifestations of its condition may be seen, so far as a scar is concerned the careful examiner will then find, that the perineal muscles are torn subcutaneously, without a visible scar in the mucous membrane or skin being present.

The usual variety of injury to the pelvic floor seen in active practice is, of course, the median tear occurring during parturition. A tear may be slight, involving only the skin and superficial fascia and not the muscular structures, or severe, if it involves the skin, superficial and deep facia, and above all, if it involves the muscles. There is little need to say at the present state of our knowledge concerning this injury, that however slight a tear may be, it requires immediate attention. Great exhaustion, due to protracted labor or postpartum hemorrhage seem to me to be the only conditions under which deferment should take place. Even though the parts are blue from long compression, a state which ought not to occur very frequently in elective obstetrics, it is far better to give the patient the benefit of the doubt, than to let her go unattended.

It is a lamentable and inexcusable fact, that the busy general practitioner, tired as he is after a long case of confinement, will put on his hat and coat and say: "Yes, everything is all right!" And leave his patient with a torn perineum. It is not enough to simply look at the perineum; an apparently undisturbed perineum, may, on

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separation of the labia, reveal a formidable tear, which was not noticed before.

With our knowledge of the anatomy of the perineum and its surgical relations, the object of the treatment of the tears at once becomes clear; the suturing of the torn tissues in such a way as to secure their union, and through this union to give the pelvic contents their normal support.

It may not be out of place here to mention an operation which, when resorted to in time and executed properly, will obviate the necessity of either the above-named more formidable operations. This means is known as episitomy, and consists of an incision about an inch in length, a quarter of an inch in depth, placed about in one-third way from the posterior to the anterior commissure on each side. This incision divides the cord-like ring, which is felt in the vagina during a pain. It is best to make the incision with a blunt-pointed tenotomy knife. The cuts must be made parallel with the long axis of the mother's body. The structures cut are unimportant, if the incision is parallel as above described. Even when no laceration is present, the pelvic floor may be practically destroyed by hyperdistention. The tonicity of the muscles then is so lowered that they act no longer as a support to the respective organs. It is essential that episitomy be timed so that it anticipates the imminent rupture, thus saving the pelvic floor from destruction. This operation certainly deserves more attention by obstetricians than it is usually accorded, as it is a good means to save perineal destruction.

It is said the pelvic floor lacerations occur in not less than 35 per cent of primipara and 10 per cent of multipara.

The wound when seen soon after its occurrence is triangular. It consists of two tears virtually, one on either side of the vaginal wall, converging toward and running together in the posterior commisure. These tears loosen a strip of tissue, which may be compared to a tongue. Even after the healing process is long complete, this tongue may be recognized in the unrestored perineum. There may be, however, but one tear, which then runs down, a little to one side or the other of the median line. The sides of the perineal wound come together easily and require only well-adjusted

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sutures to keep them in apposition. Especial care must be exercised in putting these sutures, for on them depends our success. If at all feasible, two different sets of sutures should be employed, viz: One tier in the vagina, and another through the external aspect of the perineum. This is necessary to get the best apposition and the least strain. The sutures commonly employed are put through the perineum, so that their ends present externally. The tension, which they must attain to coapt the parts, is very great, and yet there is a raw and absorbing surface left in the vagina. No doubt! Septic fever often results from the perineal absorption—another reason why the lacerated perineum should be repaired at once! The suture most suitable for the purpose is silk, or silk worm gut. An interrupted suture must be made as follows: (1) Intra-vaginal sutures—A needle, half curved, is passed just through the mucous membrane of either side and as many sutures made likewise as will secure the perfect coaptation of the mucous membrane. The ends are left long to facilitate their removal. If desirable the long threads may be slipped through a rubber tube; they will not interefere with the drainage, in fact will enhance it to no less degree. (2) Perineal sutures—With a large, half-curved needle, silk sutures are introduced just at the margin of the skin; they are passed deep into the tissues of that side, pass through the apex of the tear, high up in the vagina, deep into the tissues on the other side, and finally they emerge opposite the point of entrance from the skin. As many sutures are passed as seem expedient to close the gap securely. Before any of these sutures are introduced the wound must be absolutely clean from blood clots, and all bleeding points must be secured. This is best done by means of hot water, as all styptics are more out of place here, than they certainly are in any other. The application of medicinal styptics prevents primary union, and primary union is the one essential in perineorrhaphy, so much so, that without it we fail.

Perineoplasty is a name which should be given only to the late operation, i. e., if the repair of the perineum is undertaken after complete healing by granulation has taken place.

Velpeau, a French surgeon, is said to have been the first who practiced this operation.

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There are a number of different methods which have for their object the repair of the pelvic floor. Of them all I shall describe the one which I found especially serviceable.

After the vagina is thoroughly cleansed an incision is begun on the left side of the patient at the margin of the skin and mucous membrane. This incision is made as high up as necessary and follows the margin of skin and mucous membrane around to a corresponding height on the opposite side. I usually make this incision with a curved Emmett's scissors. The flap thus begun is used as a starting point for the dissection as follows: From the highest point on each side the dissection is carried along in two lines, which converge and finally meet in the center of the posterior wall of the vagina, as high as necessary to construct the perineal body. The flap thus raised has the appearance of a tongue, with its apex presenting externally. Especial care must be exercised in raising this flap. The flap must not be so thin that it is not viable, and it must not be button-holed for reasons which we shall see later. We must also be exceedingly careful, lest we button-hole the rectum; this accident is best guarded against by keeping the index finger of the left hand in the rectum while the dissection is going on. Finally, we must be sure to carry the dissection up high enough toward the uterus to insure enough body to the new perineum.

This method has two advantages over all others, and a great many over some. There is absolutely no loss of tissue, and what is more important, there is no need for intra-vaginal sutures.

This last named advantage is a great one indeed, for the flap covers the wound entirely and prevents foul uterine or vaginal discharges from infecting the wound, which accident would foil any attempt at primary union. For that reason it is so important to avoid the button-holing of the flap. The sutures which are introduced are exactly like the perineal sutures described above. I employ no dressing whatever and I think it is not necessary to tie together the patient's knees.

When the sphincter ani has been torn through, its location will be marked by a dimple in the skin. This part, of course, must be denuded and an extra suture passed through the denuded end of the sphincter to secure its union.

200 East Jefferson Street.

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A PLEA FOR PRELIMINARY IRIDECTOMY IN CATARACT EXTRACTION.

DAVID W. STEVENSON, M. D., RICHMOND.

Under every clime and in almost every language many works have been written on the subject of cataract. If the histologist can find in the ameba the foundation of much of his study, much more will the pathologist and surgeon even yet find scope to learn of inflammation and repair as to be studied in the cornea and adjacent structures. The accessibility, transparency and the mode of nutrition in the cornea make the eye the battlefield for many diverse theories.

Hard cataract is materially a disease of the aged. And as investigators we ought ever to remember that cataract operations are upon the average done on persons 70 years old and upwards. In a considerable number of cases it will be associated with failure of nutrition in other directions, with renal insufficiency or cordial weakness, or even as shown by Dr. Wheelock at Indianapolis last year, by atheromatous degeneration. Modern operators are divided into two camps, those that do the simple operation, and those that do the combined. The combined operation generally refers to an iridectomy done at the same time as the extraction, with the removal of a portion of the iris through the same section that the lens passes through.

Dr. Mooren, even before Von Grafe devised his operation, had written a pamphlet on the advantages of a preliminary iridectomy. To-day there must be at least a dozen writers who advocate it, especially in serious cases.

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While I was house surgeon in the Illinois Charitable Eye and Ear Infirmary at Chicago, one of the attending surgeons, Dr. Ware, did, and continues to do, all his cataract cases with a preliminary iridectomy. I can give my testimony that his cases went smoothly along and the nurses and internes did not lose any sleep from his patients, occasioned by an iritis or a prolapse. Yet visitors to that institution generally did not look upon him as a brilliant operator. A man who requires two operations to do what can be done in one will probably never be popular.

In 1892 Professor Landolt, author of the masterly work, "Accommodation and Refraction of the Eye," has written an exhaustive article of more than 70 pages under the title of, "Cataract Extraction of Our Time." He shows how in the operation to be selected the personal element comes into play, "the individuality of the operator himself, his temperament, his intellectual and moral qualities and his manual skill." He favors a preliminary iridectomy. He says: "We certainly risk less by performing with vigorous antiseptic precaution an iridectomy first; then, after complete healing, the extraction, than if we make the whole attempt at once, whether with or without the iridectomy, upon a more or less complicated cataract." Simple extraction would be indicated in cases of simple cataract; that is to say, cataract that is susceptible of easy elimination and is present in persons who are docile, healthy and reasonable. Probably one-half of the cases that the writer has seen operated upon would not meet these or other requirements of a simple operation, and the object of this paper is to make a plea that at least all doubtful cases may have the benefit of a preliminary iridectomy. It is in line with conservative surgery. Conservative surgery unfortunately is not often popular or brilliant. But every general practitioner ought to know the reasons for conservative action, as his advice often carries the most weight, and his interests in his patients are above that of the brilliant operator, who may be pressed for time. The writer has had the privilege to witness and assist some of the best operators in America and moreover has had to take charge of the after-treatment of the patients. Moreover, from a considerable experience both here and in China I have been able to formulate a number of reasons why a preliminary iridectomy will

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give safer prospects in at least one-half of our cataract patients. Out of these reasons I have chosen twelve; four applying to the time before extraction, four during the time of extraction, and four after the operation.

1. It allows the equatorial region of lens and even the retina to be examined more closely.

2. It allows the patient to have better vision during the early history of cataract, with greater freedom from tension.

3. It hastens the period of maturing in the lens.

4. An artificial blood supply may put the eye in better condition for operation.

5. It is easier to perform.

6. There is a better chance to use eserine before extraction.

7. It gives a better chance to perform discission.

8. It allows more time and opportunity to clean the eye of cortical matter with less chance of internal hemorrhage.

9. It lessons the period in bed.

10. It is most apt to prevent corneal necrosis.

11. It is a better preventive of iritis.

12. There is less chance of losing vitreous with detachment of the retina.

It will now be in place to more fully amplify these reasons:

1. As to the first it will be easily understood that the coloboma from the iridectomy will permit the equator of the lens to be seen better and if the cortical is transparent even the retina may be examined.

2. In the same way the patient may see through the transparent cortical while the nucleus is opaque. This is better than using atropine, and no risks are run in regard to starting glaucomatous tension, indeed the iridectomy surely prevents it.

3. It has been proved by actual experience that an iridectomy hastens the ripening of a cataract, so that the extraction may take place earlier and the soft cortical will not be left behind to start an iritis. The long tedium of waiting during an extended period of failing vision is very apt to be extremely irksome and depressing. In the aged there are few persons so endowed with fortitude that slowly increasing blindness will leave their health, or their spirits

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unaltered, or their powers of vital resistance unimpaired. Anything that might mitigate the reduced circumstances of forced idleness, or cruel anxiety is to be desired. The writer believes if he should ever find that he has commencing cataract in one eye that he will have an iridectomy done at once, so that the one eye may be operated upon before the other gets blind.

4. In the aged the cornea is often thin and under-nourished, as may be seen at some operations when the cornea collapses or falls into wrinkles as soon as it loses the support of the aqueous humor. The preliminary operation will cause an increased blood supply and in these cases conspicuous success may be expected.

5. It is easier to perform than the combined, because it separates two delicate operations. When they are combined it very often complicates matters. The iridectomy is often painful and the iris may bleed, but it is practically never dangerous when done alone. We are thus able to separate the operation of pain from the more delicate extraction which requires tranquility on part of both patient and surgeons. The simple operation always requires a larger section in the cornea or more force applied to force the lens over the iris.

6. It is desirable to use eserine before extraction, because it causes contraction of the iris. A contracted iris is not near so apt to fall over the knife while making the section, or prolapse into corneal section after the extraction. A contracted iris also allows one to see the location of the knife more clearly while passing through the aqueous.

7. The discission can always be done more clearly and freely when there is no blood, which often happens to be present with the combined operation. In the simple operation when the iris contracts after loss of aqueous, and especially if eserine has been used there is often little opportunity to do a proper discission.

8. With no blood in the anterior chamber, and there being a clear coloboma connecting the anterior with posterior aqueous chambers, the cortical matter is much more easily seen and got rid of. Moreover, as less pressure is required to get rid of lens and cortical matter there is a great deal less danger of hemorrhage from choroidal or retinal vessels.

9. It may appear very unreasonable that two operations should

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require less time in bed than one This is often due to the fact that prolapse of the iris is more to be feared, and the aged patient is ordered to lie flat on his back for several days in the simple operation. This often makes great demand on both patient and nurse, and is often irksome in the extreme. The preliminary iridectomy does not often require the patient to stay in bed during the day time. Fucks and Swanzy have shown very clearly how even a narrow iridectomy prevents the aqueous in the posterior chamber from acting with full force upon the iris, so as to cause a prolapse during a fit of coughing or sudden opening of the corneal section.

10. Corneal necrosis is to be feared when the section is large or much force is used to push the lens past the iris. I believe almost any surgeon would increase the section in simple operation over the same when there is an artificial coloboma.

11. An old iridectomy is a preventive of both iritis and glaucoma. There must always be more liability of bruising when the iris is complete and intact. While I was in the hospital at Chicago a cataract patient became maniacal and died, probably due to the assiduous use of atropine by a doctor who wished to save the round pupils from the adhesions of iritis.

12. Damage done to the retina is none the less insidious and real because it is not seen. Slight detachments of the retina, which may fall back again and adhere may start up slow deterioration, which may end in great loss of vision. In the same way changes in the vitreous often leads to atrophy of the eye, although the operator at the time may have published the case as a success.

The writer recalls with pleasure two cases where the preliminary iridectomy gave him a very satisfactory result in complicated cataract, and in which any other method would have meant failure. One was in a patient with only one eye, and that eye had a broad anterior synechia, with a very shallow anterior chamber. It would have been utterly impossible to extract by the simple operation, yet by first doing an iridectomy the patient was given excellent vision.

The second was in a patient both deaf and blind. Although a little hard to describe the mechanical and other difficulties in his case, yet when it came to the extraction the previous operation had made the way so easy that the patient wrote on his hand, asking

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when I was going to cut his eye, yet this was after the lens was out. Circumstances may be somewhat against the general adoption of so conservative a measure. Some of our great operators have little time to spare. Their office rent may cost from $1,000 to $2,000 per year. A patient with friends has come a long distance to have a cataract removed. Will he advise two operations? Another doctor might get the second and last chance.

Sometimes the obstetrical professor will put on the forceps when if the patient were his wife he would allow an easier way for extraction. This reminds us also of the men who have delivered their thousands yet never had a perineum ruptured. They were never looking for such. In the same way rapid eye surgery may point to the round and pretty pupils and claim as good vision behind. But reason ought to tell us that cautious and conscientious conservatism may retain longer to the aged patient the use of his eyes, the most magnificent, entertaining and useful of all the organs of the human body.

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BLACK CATARACT—REPORT OF A CASE WITH REMARKS.

J. O. STILLSON, M. D., INDIANAPOLIS.

On August 11th, 1895, I was consulted by Mrs. W——, widow, aged 76, who came from Walnut Hills, near Cincinnati, Ohio, who gave the following history: Her general health was good, although she was a woman of rather frail physique, of medium stature and light weight; she was the mother of three children, all grown and married. She was brought to me by a granddaughter, who had been a former patient of mine. There had been no history of blindness in the family, either immediate or remote, but her son, a man of medium age, and the father of the lady who brought her, had always been myopic, and his myopia is of the progressive kind, as it has advanced from something like S.-2.00. to S.-5.00 D. during a period of about fifteen years. The granddaughter also, referred to above, had myopia equal to S.-1.00.D. at the age of twenty-two, and a grandson, brother of the last named party, also had myopia at the age of fifteen. While therefore no history of blindness could be found in any of the ancestors of the patient, in three of her immediate descendants we have myopia, all probably progressive; moreover, the patient herself, while she had in former years always enjoyed the best of eyesight, was known to be myopic up to the time when her eyesight began to fail. She relates also that at the time she became presbyopic, she had "second eyesight," and for a number of years had been able to read the finest print without glasses, although still compelled to wear minus glasses for her distant vision. Eight years ago she began to notice her sight fail, both for near and

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for far vision, and with increasing dimness of sight occurred occasional pains of a neuralgic character, which, however, were only periodical and never of long duration. Changes in her glasses had been made from time to time, but always with the same result; the slight improvement thus afforded was of but short duration. Slowly and steadily the blindness increased, until at last some four or five years ago, she was forced to depend upon others for guidance and assistance in the preparation of her food. She had been an industrious reader, and she had suffered keenly from the privations thus caused by her lack of sight. According to her statement she had at various times consulted able authorities who had given her an unfavorable prognosis. Operation had not been advised by any of them, in fact, the last advice which she had was against operation of any kind. She was told that she did not have cataract, yet she gave no very well defined account of the diagnosis whatever that might have been; she knew nothing of glaucoma, as inquiry upon this particular feature failed to elicit any information. The tension of both eyes was plus, although not decidedly marked. Phosphenes she had had, but they had never been a prominent symptom, and had never caused her very much annoyance. The scelrotics were white, the pupils were apparently perfectly clear, and they were black like normal pupils; they were of the usual size and responded feebly to light. The globes were set back in rather deep sockets with prominent eyebrows. Upon opthalmoscopic examination the fundus could not be made out. No trace of retinal reflex could be obtained; what appeared to be the vitreous looked smoky, not altogether translucent, and still not transparent. Both corneae were normal and the anterior chambers were full though deep. Projection was good in both eyes; the candle in a dark room could be pointed out with unfailing distinctness, and its movements followed with accuracy. Oblique illumination proved to be to a great extent unsatisfactory. The light seemed to penetrate the lenses and return from their posterior surfaces with a peculiar amber reflex that indicated well advanced scelersis.

The writer has frequently observed that in patients of this type the mydriatics, especially atropine, are prone to produce very unfavorable effects. It is not uncommon to see the physiological action

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of the drug come on very rapidly and prove quite alarming. The pupils on this account were dilated with homatropine, used in the form of gelatine tablets, one of each placed in the lower cul-de-sac of each eye, and the eyes kept bandaged for an hour. At the end of this time the pupils were well dilated and on further examination the lens were found to be large, of the same consistency throughout, except the one in the left eye, which presented a translucent border near the periphery through which the red reflex from the fundus could be made out and in this eye, all around the border of the lens could be seen delicate dentated striae, raident in character, converging toward the body of the lens. The diagnosis, therefore, was lenicular sclerosis, which had finally ended in black cataract.

The patient was very anxious to learn whether an operation could be performed that would in any way aid vision. The prognosis was given as uncertain, although not hopeless, and by common consent two months were agreed upon, in which to watch the case and search for complications. Analysis of the urine subsequently gave a negative result. No bladder complications were found, the eyes responded to mydriatics and myotics. Atropine proved to be unbearable, but homatropine was borne without any unfavorable symptoms. At the end of this time there was no change in the lenses. It was then determined to operate, after fully explaining the probability of intraocular hemorrhage, which is so frequent in these cases. It is well to remark here that in the majority of such eyes choroidial and retinal changes have as a rule long preceded the development of cataract. The history of myopia in the beginning, and the second eyesight prior to the blindness are indicative of progressive myopia, in which we find sclero-chroiditis posterior, and sometimes hemorrhages in the vitreous. The lurking symptoms of glaucoma, attested by the increased tension, the pain, the phosphenes and the rapid increase in presbyopia are all pathognomonic of intra-ocular changes which precede the death of the lens, and should never be ignored or treated lightly. Besides the former advice given her by no doubt able advisors to refrain from operative interference, were elements in the case one does well to heed. Notwithstanding, I determined to yield to her earnest request and give her the benefit of an operation, basing this rsolution

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largely on the fact that the retinal perception was still as I thought fairly good. Accordingly, after a few days' hospital treatment, during which aperients were administered, the patient becoming accustomed to her surroundings and nurses, all minor details as to her comfort and convenience having been arranged, on the 11th day of October, I operated both the eyes according to the method of extraction without iridectomy. The right eye was operated first. The section was necessarily large on account of the large-size lens, which was delivered without difficulty. The iris met with no accident; it was replaced with the flat gold spatula, after which a small amount of blood appeared in the pupil, probably from the corneal wound, which was quite peripheral throughout its whole extent. After two or three washings no more blood appeared, the flap adjusted itself nicely, the pupil was round and central, and with her back turned to the light of the window she could read the time by her watch. The eye was then dressed antiseptically, a few drops of cocaine, 4 per cent solution, and eserine 1 per cent solution, added, and the lids sealed with plaster made from gold beaters skin, placed crosswise in the form of a letter X. The left eye was immediately subjected to the same process, first washed out thoroughly with boric acid solution, anaesthetized with 4 per cent. cocaine solution, and the same operation undertaken as on the other eye. Unfortunately the edge of the knife became involved in the iris just after the counter-puncture, and by the time the section was complete the chamber was full of blood. This was washed out three or four times before the capsule was ruptured, in order that no more violence should be done the iris by the cystatome. The lens was then delivered without trouble, and with it a small portion of iris from pupillary border. Hemorrhage continued. The iris was, however, replaced, and the washing of the anterior chamber begun again. This was kept up for some time with short interruptions whenever the pupil became clear and as often repeated when blood appeared. Finally hemorrhage ceased. When upon testing the eye as before the vision was nearly as good as in the other eye. The dressing was the same.

The patient made an uneventful recovery. Anodynes were given at night, the mask worn continually, and the eyes were not dis-

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turbed or opened until the fifth day, when vision was in every way satisfactory. No further hemorrhage occurred, there was no iritis, no pain, and no unfavorable symptoms. She left the hospital in cheerful spirits and with good vision on the tenth day.

In testing the refraction after two weeks it was found that her vision was 20-40, with sph.-2.00D.-cyl.-0.50D ax-180., and she could read the print in an ordinary newspaper with sph.-1.00D. After a visit of a month to her home in Cincinnati, she rturned to have her glasses changed, but no essential correction was needed.

It may be well to mention that some times we find black cataracts which owe their color to the presence of hematine. The hemato-spectroscope will demonstrate the presence of this pigment. Plunged in absolute alcohol, these lenses give out their coloring matter, the alcohol becoming red and the lenses resuming to a certain degree their transparency. M. Gillet de Grandmont, Kalt, Meyer, Gorecki, and others have found that sections of the crystalline, treated with alcohol, and examined spectroscopically, have shown hematine, and hemine, as the basis of color, intermixed with the sclerosed fibres. These cataracts in the case here reported gave out red coloring matter to alcohol, but they did not become transparent. Their central nuclei remained dark. I do not think that in these eyes hemorrhage ever occurred prior to the operation, but the peculiar dark amber color was due I think to general complete sclerosis. To what are we to attribute the good results in this case? Evidently several factors enter into the answer of this question. In the first place, the writer believes that much good came from deliberate study, and the avoidance of haste in the management of every detail from the time the eyes were first seen until the patient was discharged cured. It is a firm conviction in the mind of the writer that haste makes waste. Many operations hurriedly made, because the patient is away from home, or because friends and relatives get in a hurry, or because of a few dollars railroad fare and hospital board, have seriously compromised the per cent. of cures, in cases where better acquaintance between operator and patient would have resulted otherwise. The temptation to make many operations has, without doubt, been the means of allowing some minor detail to pass by overlooked, and some valuable infor-

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mation has been forthcoming too late to be of service. Take the matter of mydriatics. How important this becomes, in a case where they cannot be borne. The avoidance of intra-ocular hemorrhage or the management of it when it does arise, the proper attention to the bowels and bladder before the operation takes place; the smoothness of the operation and antiseptic care at the time, were elements for good. The removing from the eye of all traces of blood, the early administration of anodynes after the operation, and the good fortune in securing perfect rest and quiet for the first few days, did away with the necessity of opening the eye before such a time as would make sure that union of the corneal incision was complete and perfect and all danger from iritis past. It is the opinion of the writer that the selection of the operation without iridectomy contributed in part to the success, because the one thing we have to fear above everything else in a case like this is hemorrhage. Intra-ocular hemorrhage as a rule comes from the deeper structures of the eye, the choroid and ciliary region, and in some cases probably from Schlemms canal. A wide section, ending in the sclerotic, will necessarily sever some vessels, and when we remember that an atheromatus condition obtains, the persistent hemorrhage will be accounted for; how much better, therefore, is it to avoid wounding the iris, which will bleed more than it would in an eye where the vessels are not bereft of their elasticity. As in this case the slight accident to the iris caused considerable hemorrhage, which in the other eye did not take place. Last, but not least, was the fact that the condition of the retina was favorable, as was shown by the examination of her perception and projection, and upon which the final determination to operate was based. Had this been wanting the operation would probably have been denied her, and she would have remained blind.

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INTRA-CRANIAL LESIONS WITH PARALYSIS OF SEVERAL CRANIAL NERVES.

J. L. MASTERS, M. D., INDIANAPOLIS.

I was impelled to write upon this subject by a patient under my care whose history and deductions drawn from it form the greater portion of this paper.

The report of the case will reveal the paralysis of six cranial nerves, viz., the left optic tract of the second, the complete suspension of the function of both thirds, the right seventh, partial paralysis of the right fifth and the right eighth. It shall be the effort of the essayist to show that the lesions are intra-cranial and multiple.

In order that the true condition of the patient may be the better understood some drawings of photographs will be shown which were made at different stages of the disease.

Mrs. B. aet. forty (40) was first seen November 26, 1895. She always enjoyed excellent health up to ten years ago. She was then sick for ten months in a hospital, pain and jaundice being prominent symptoms.

About one year after this she had severe pain in the stomach after each meal. This was always relieved by vomiting. For this she was often given morphine, and finally commenced taking it herself. The dose was not augmented for the first year, but was afterward increased until it reached the enormous dose of fifteen grains a day, which was taken each morning before arising. The morphine habit was cured by Dr. Nash about two and a half months before coming under my care, and there is no inclination to return to the use of the drug.

Mrs. B. was married at the age of sixteen years; has had four children, two of whom are living, two dead. One died at eight years

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of croup, the other at eleven of pneumonia. No miscarriages. Children were all healthy except the youngest, aet. sixteen, whose blood is said to be bad, he having an eruption called scald-head.

Mrs. B. had sore throat about six years ago, but never had any sore or falling hair or eruption or other manifest symptoms of specific trouble.

The first thing noticed in connection with her present illness was last June, when she found upon awaking that her face was drawn to the left and the right eye stood open and she could not close it. She had some trouble keeping food between the teeth and water ran out of the right corner of the mouth in drinking. There was trouble in swallowing, the right palatine arch was not well defined and the taste in the right tip of the tongue was absent. Speech was muffled. The skin above the right eye felt numb. One month later it was necessary to cover the right eye on account of double vision. The mouth became some straighter in about six weeks. From exposure the right eye became much injected.

Two months after the facial paralysis the right eyelid gradually dropped. Subsequently the eye turned out, the accommodation was paralyzed and the pupil became dilated.

The left lid dropped about two months after the right. Two weeks later the eye turned out, the pupil dilated and she could no longer read.

She then had complete paralysis of both motor-oculi with divergent paralytic squint, ptosis, etc. She had no power to move the eyeballs or lids, except by great effort, each eye could be made to turn out a little farther and attempts to look down were attended by slight rotation of each globe. Coincidently with the involvement of the thirds, neuralgia of the supra orbitals was ushered in. Headache first appeared in September over the left eye. At the same time sensation returned in the right brow.

Two weeks later the pain had extended to the latter region and frontal headache became constant and severe, so that after a few minutes sleep she was awakened by the pain and slept very little more that night. Memory good, sense of smell not noticed, but she is somewhat deaf in right ear.

W. D. R. 10 feet. One year ago she had a purulent inflammation of the right middle ear which lasted about two months. At that time

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she was quite deaf. Inspection showed cicatrix in right drum with retracted membrane.

Tuning fork shows bone conduction equal to air conduction. Webber's test shows fork heard longer in left ear, locating the lesion in nerve as well as conducting apparatus. She was apprehensive of coming trouble.

Suffered much from neuralgia in the jaws. Right cheek was sore to the touch. She thinks the facial paralysis came on rather suddenly while the paralysis of the motor-oculi came slowly. Recently noticed she staggers when she first starts to walk. This is worse when both eyes are uncovered.

On December 11th she presented the symptoms as above enumerated together with the following: A flabby inactive condition of the right cheek. Both upper lids covering the greater portion of the cornea.

Both eyes are slightly protuberant and diverge. Both pupils still dilated and do not respond to either light or efforts at convergence.

The right eyeball feels sore, but there is no tenderness on firm pressure; ocular and palpebral conjunctiva injected.

The right internal and inferior recti have slight contractile power, but the accommodation is at rest, and the upper lid cannot be elevated nor the eyeball moved upward. In the left eye the condition of the muscles is the same. Complaint of poor vision led to an examination of the eyes at this time. The nasal side of the right optic nerve is infiltrated, oedematous and margin poorly outlined. Vessels normal.

The left disc has a grayish infiltrate and oedema in temporal half. V. O. D. 20-100 w. plus .75 Ds.⌒ plus .50 Dc. ax. 90 degrees—20-40—J. No. 4 w. above and plus 3 Ds.

V. O. S. 20-70. w. plus 1.25 Ds.=20-30—J. No. 4 w. above and plus 3 Ds.

Fields of vision both contracted as shown. The later symptoms as recorded are as follows: Dec. 19th: Ptosis in right eye partially gone. Pupil only about one-half dilated. Considerable power of convergence, depression and elevation of the globe. Can raise the lid some.

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Ptosis in O. S. complete, pupil widely dilated and the eye is in extreme divergence. Headache all gone. December 20th: In the evening found the temporal field in right eye and nasal field in O. S. amblyopic beyond forty-five degrees.

The right eye now stands open all the time. She cannot close it or wink. She has small corneal ulcer at lower margin of the pupil from the exposure last night. On the 21st found complete hemianopsia of the right temporal field involving the middle outer quadrant. In the left eye nasal field as above. The soreness over the right cheek has given away to partial anaesthesia as far back as the ear and forward to the infraorbital foramen. The right half of the tongue and inside of right cheek feel burnt. The gait is still staggery when she first starts to walk. Dec. 23: Reports having slept well from 8 p. m. to 2:20 a. m., without waking. Dec. 25th: She came to my office, stating that she had slept all night. Had swept and dusted her house and walked a mile to my office. While waiting I noticed she had a magazine, which she was reading.

This is the first she has read since the left eye lost its power of accommodation. The reading was done with the left eye. As the accommodation in the O. D. was paralyzed with atropia on account of the corneal ulcer, I do not know if she could read with it. She has had no headache. To note the subsequent changes as they occurred from day to day would require too much space and time, but the dates on which some of the most characteristic changes occurred are as follows: Binocular vision and parallel visual axes returned on Feb. 28th. Since that time the eyes are perfectly straight, and she no longer sees double. Eyes move co-ordinately.

The taste commenced improving in the right tip of the tongue on Dec. 26th, but did not become normal until Feb. 25. On Dec. 25th it was noted that she could drink without the liquids running out of right corner of the mouth, and that she could keep the bolus between her teeth on the same side. She also swallows much better. She has had no headache nor insomnia since Dec. 25th. The sensation in the cornea did not become acute until Feb. 25. The anaesthesia over the right half of the face became acute Feb. 5th, but there was slight sense of soreness on pressure over infraorbital foramen up to March 1st.

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On Dec. 24th there was a tendency to the return of the ptosis, at which time the lid stood partly open with inability to close it or farther open it. Dec. 31st it was noted that the right eye was moveable in all directions but could converge only to forty degrees. The eye could be opened but the patient could not close it tight until March 10th. The ptosis of left eye gradually left until it was gone on Jan. 28th. The pupils became normal about the same time, but did not respond to light for some time after. They contract to convergence Jan. 28th. Jan. 25th: hearing in right ear for whisper is twenty-five feet. Vision in right eye is 20-30—J. No. iv. O. S. 20-20. J. No. 1. The fields of vision gradually enlarged, but both are still curtailed outside of 75 deg. It was noticed on Feb. 25th that the right pupil had become slightly dilated again and is still a little larger than the left. The appearance of the optic nerve on the right is slightly gray at nasal side. Media slightly hazy. Left almost normal with disc clearly outlined all the way round. Slightly gray at the temporal side. To diagnose the condition present in the cranium in this case it was necessary to get a complete history of the patient's family. Close questioning elicited the following as to her husband. Ten years before he had an eruption on his body said to be barbers' itch. One year later he complained of suffering greatly from rheumatism in his legs and had nodes on the tibias. There was a dark ulcer on his heel about the size of a silver dollar, which was a long time in healing. There was also some loss of the hair. Taking this with the great insomnia, the constant localized headache, the paralysis of one nerve after another, the fact that the majority of such cases are due to syphilis, and without a clear history of any other condition to produce such a condition, I made a diagnosis of syphilis of the brain. and put her on a sat. sol. of pot. iodide, commencing at 40 gtts., increasing 5 gtts. each dose, until I reached 100, and then one drop each dose, until Jan. 9th, she took 143 drops three times a day. This dose she has continued to take ever since with a couple of intermissions of two days each. She never had any signs of iodism and I have no doubt could have taken much more. On this she gained thirty pounds in flesh, increased in strength and improved in every way. Syphilis of the brain usually manifests itself in one of two ways, viz, as a diffuse degenerative process or by the deposit of

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morbid products, as gummata, and usually attacks either the meninges or blood vessels and less rarely, the deeper portions of the brain. In a condition like the present it is difficult to localize the lesion so as to produce the pathological changes and yet leave other contiguous portions sound and well.

Commencing by taking up the initial symptom, the facial paralysis, it was of much value to determine whether the lesion was within or without the cranium. Disease in the middle ear sometimes produces paralysis of the seventh. In this case we have a history of O. M. P. A. twelve months before.

Could it be that the outer wall of the aqueductus fallopii had been destroyed and the nerve injured at this point? Loss of taste, another symptom, might have come from implication of the chorda tympani in the middle ear. We also have paralysis of the right palatine arch. This is inervated by the petrosal nerves, branches of the facial, given off within the acqueduct just after it enters the canal. This proves conclusively that the lesion must be located nearer the center than the origin of the petrosal branches. Here we are confronted by another problem, for in the auditory canal and some distance in the cranium the seventh is in the same sheath as the auditory, and we could hardly have a lesion of the one without the other. We have seen that we have impaired hearing in the right ear, and have shown in our examination that the nerve is involved. Had we need of further proof that the deafness depended in part on the same cause as the facial paralysis we have it, I think, in the fact that, although the ear received no local treatment, the hearing distance extended from ten to twenty-five feet, after the administration of iodide of potash.

When we go further in and endeavor to locate the nucleus of the seventh we find that this, according to some authors, is common to the sixth and seventh, and a lesion of one is apt to involve the other.

Yet the sixth nerve is at all times intact. We have so excellent an authority as Morris, however, for the statement that the nucleus of the sixth is simply inclosed in an arch of the seventh on its way from the nucleus to its exit at the posterior surface of the pons. As it passes forward, outward and downward, it passes between its own nucleus and the ascending root of the fifth. It is possible to have a

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small gumma at this point, which would produce the result and not involve the sixth. But Herter says, in "Nervous Diseases by American Authors," page 825, that in paralysis of the facial due to disease of the facial nucleus that the orbicularis oris escapes entirely. In our case the above muscle is one of the last to show signs of improvement. He also says that where taste is lost in the right tip of the tongue that the lesion is beween the origin of th chorda tympani and the geniculate ganglion. In the case recited taste is lost. Further: (1.) Centric or supra-nuclear (cerebral) lesions do not show persistent paralysis of the eyelid. (2) Emotional movements are little or not at all impaired. (3) Reflex action is unchanged. (4) Electrical reaction is normal or slightly changed. All these are directly opposed to the conditions in our case. Having found that the lesion of the seventh is nearer the center than the origin of the petrosal and that it is not nuclear, that the eighth is involved with it, it only remains to state the nereve is involved between its nucleus and the internal auditory canal, probably at the base, or entrance to the canal.

It is interesting to note that while the other nerves were becoming involved the paralysis of the seventh nerve passed away. It is true the right eye, which at first stood wide open finally closed when the third nerve became paralyzed, and that it opened wide again when the third nerve regained some of its power. Here we might pause a moment to see why this was. The muscle which closes the eye, the orbicularis palpebrarum, receives its motive force from the seventh, and when withdrawn the eye opens because the levator palpebra innervated by the third, raises the lid. And finally the third becomes paralyzed and all the muscles supplied by it lose their power and the lid closes. The lid usually drops because the orbicularis palpebrarum pulls it down, but in this case, it being paralyzed, it must have dropped through force of gravity, only to be widely opened again when the third nerve regained its tone. The paralysis of both third nerves was complete, involving all the muscles which move the eyeball, except the external rectus and the superior oblique, together with those that preside over accommodation and the pupil. Paralysis of the motor-oculi is one of the most frequent paralyses affecting the cerebral nerves, so it is important that we be able to locate the lesion producing it. "In nuclear paralysis," Noyes says, "it is of-

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ten incomplete, worse at night, and when fatigued. A very significant symptom is somnolence. And a most important symptom is the absence of double images. It is only when the intrinsic muscles are exempt, or are the only ones involved that we have an absolute diagnostic sign of nuclear disease." * * * * * "Disease at the base of the brain involves all the nerve trunk, and all the muscles supplied by it are paralyzed." Referring to the history we find the above indications pointing to basal lesions in the case reported. When we look at the disturbance in the fifth we find the whole nerve involved, anaesthesia being preceded by hyperaesthesia and neuralgia. All the portions of the skin, mucous membrane and the cornea were deprived of sensation to a greater or less extent, and the motor root of motive force.

Herter states that when the nucleus or origin is affected, the paralysis is partial, as a rule, because the sensory nucleus is so extensive that it is rarely affected throughout. He further states that paralysis of the three divisions of the nerve point to disease at the base of the brain, or perhaps, at the Gasserian ganglion. If the sixth is involved it is surely near the point of emergence of the fifth at the side of the pons. Fuch's says one of the facts leading us to suspect basal lesions is when the paralysis of the fifth begins under the guise of neuralgia, the latter not being observed in central paralysis. In this nerve all the branches were involved, neuralgia was a prominent early symptom and the sixth is unaffected. It is possible that the optic nerve was involved in the same lesion that produced paralysis of the left third.

But it is not necessary to try to explain this condition as being due to any one lesion. The bundles of fibres coming from the nuclei unite to form the optic tract. Each optic tract unites with its fellow at the commissure, where there is a crossing over of a portion of the left fibres to the right eye and vice versa. The major part of the left optic tract supplies the left part of the right eye with the sense of sight, while the minor part does not cross over in the commissure, but goes to the left part of the left eye. If we have a lesion any place along the left optic tract back of the commissure and up to and including the nucleus there will be impaired vision in those parts of the eyes supplied by it. Returning to the history we find

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impaired vision in each, but worse in the right, the eye which receives the greatest portion of the nerve fibres from the left tract.

In taking the fields of vision we find the temporal field of the right eye is much constricted, at one time the outer half of the field being entirely dark, while in the left eye the nasal field was dark beyond thirty degrees and forty-five degrees. The amblyopia for the left eye never extended up to the center.

In this case we have partial homonymous hemiopia; that is, a part of the left half of each eye is blind. If the lesion was situated in front of the optic commissure in either nerve, the whole eye corresponding to that side would be blind. If the lesion was in the middle of the commissure we would have blindness of the nasal sides of both eyes; in order to have a blindness of the temporal halves of each eye we would have to have two lesions so placed as to press on the fibres from each tract, which do not cross, and which go to the temporal sides of each eye.

There is a deeper origin of the optic nerves than the one given and it is possible to have a lesion in the cuneus, in the occipital lobe, which may produce one-sided blindness. But when this is true we involve those higher cerebral centers which have to do not only with space-sense as in our case, but also with light sense and color sense.

If the lesion is in the cuneus there may be inability to recognize color or locate light, but space sense will remain intact. In our case we have complete loss of space sense in a portion of each eye.

Wernicke's symptom also locates the lesion some place in the optic tract between the commissure and the corpora quadrigemina.

He assumes that if light falling on the blind part of the retina causes no contraction of the pupil that the lesion is in that portion of the sensory motor arc of the pupil reflex included between the chiasm and the copora quadrigemina.

Further points in favor of a basal lesion are: (1) "When a whole series of cerebral nerves on one side, such as the third, seventh, fifth, second and first are paralyzed one after another. (2) When the affection of the fifth begins in the guise of a neuralgia, the latter not being observed in central paralysis. (3) Basal lesions can with certainty be excluded when there is third nerve paralysis in which the interior muscles do not share." From what has been said it seems

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that the most plausible theory as to the location of the lesions producing the combined effect noted in the case is that there is a diffuse syphilitic invasion of the dura matter, with implication of the above nerves, where they emerge from the base of the brain, along their course at the base, or at their points of exit from the cranium. The prognosis, for full recovery, is good for all unless it be the facial, in which it is possible that such degenerative changes have taken place as will prevent a complete restoration of function.

The treatment has been antisyphilitic and galvanism to keep up the transmission of nerve force as long as necessary or until normal function is restored.

149 North Pennsylvania Street.

(At the time of this proof reading, Nov. 3rd, Dr. Masters reports that the patient has made a complete recovery. Ed.)

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EPIDEMIC OF GRANULAR LIDS.

GEORGE F. KEIPER, M. D., LAFAYETTE.

Two miles directly south of Tippecanoe County Court House stands the St. Joseph Orphan Asylum upon a large tract of land. The grounds are one-half mile beyond the corporate limits of Lafayette. The building is very large, and is of brick. It is four stories high. Throughout, the ceilings are high and the rooms large. The building is heated with steam. Cleanliness is everywhere scrupulously observed. The surroundings furnish ample drainage naturally. It stands on a hill, which slopes off on three sides into fairly deep ravines, through which runs most of the year a fairly ample stream of water. The water of the building is supplied by a well, pumped with a wind-pump into a cistern near the building. The well is situated in the field about a quarter of a mile from the building, and the quality of the water is counted good though typhoid fever has once in a while made its appearance. Unfortunately it has no other water supply. There is no plumbing in the building, save that which belongs to the steam plant. In this building live from 120 to 140 orphan boys, whose ages run from 2 1-2 to 16 years. It is under the control of Father Joseph Guendling, assisted by twelve Sisters of Charity. On August 27, 1895, the writer was summoned to the building to attend three cases of sore eyes, which proved on examination to be trachoma. There are a great many sore eyes which are called trachomatous by oculists, when there is no trachoma. The mistake occurs in calling follicular conjunctivitis trachoma. In follicular conjunctivities, it is true that we find granules. But they are localized to the fold of transition and are arranged like a string of very small pearls. Moreover, the course of the disease is much different from true trachoma. Folli-

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cular conjunctivitis usually yields readily to treatment, and never has pannus for a sequel. There is little pain and hardly any lachrymation of photophobia. In trachoma we find granules distributed promiscuously and unevenly over the palpebral conjuctiva. When trachoma is well established the prognosis for rapid cure is unfavorable. Failure to implicitly obey the physician will entail endless trouble, even after the cicitricial contraction has choked off the granules. Pannus is frequent. Pain, lachrymation and photophobia are constant symptoms.

On the second visit to the asylum, two days later, two additional cases had developed. These, with the others, were isolated, and active treatment instituted. On September 3d another visit was made, and two recruits to the list of patients appeared. The next visit found the number increased to ten. Suspecting lurking cases, on Sunday, September 8th, the children were assembled in their rooms, and each and every one was examined. The result was that we had seventy cases of granular lids to treat. Some were incipient. Examination showed that the children had been using towels and wash bowls in common. Orders were issued that each child in the building have his own towel and wash bowl. The orders were immediately executed, with the happy result of not having a new case since the general examination. For the most marked cases the following formula of Dr. Xenephon Scott was ordered, dropped into each eye every three hours:

℞ Berberin Sulph. - - - - - gr. v
Acid Boric,
Soda Birboat - - - - - aa gr. v
Tinct. opii deod - - - - ʒ ss.
Aquea Dest. - - - - - - ʒ j M.

For the mild cases the following was used every three hours:

℞ Zinc Sulph. - - - - - - gr. i.
Acid Boric - - - - - - gr. x.
Aq. Rosae - - - - - - ʒ j M.

Where iritis or pannus was manifest atropia in solution was dropped into the eyes every four hours. All cases were ordered to bathe their eyes in water as hot as the back of the hand could stand, for five minutes hourly. At each visit the writer applied to the

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everted eyelids a ten-grain solution of nitrate of silver, washing away any surplus with cold water. Thus the treatment has been continued until now. At the present time all have recovered, thanks to the careful attention of those faithful Sisters. If sore eyes in general could receive the attention which they so faithfully bestowed results would be much better than we usually see.

The cause of this wide-spread contagion was soon discovered. It started from one boy who a year ago entered the asylum with sore eyes. The spread was easy, because of the towels and bowls being used in common. In the treatment above outlined no mention is made of blue stone. The writer very seldom uses it since Dr. Scott gave us his formula of berberin sulphate. This, plus the nitrate of silver, did all that was to be desired.

Diseases are more easily prevented than cured. This holds in this instance. Trachoma will spread through a family just the same as above. When it appears in one the oculist should insist on examining all and isolating the infected. In all institutions where large numbers are congregated, each should have his own bowl and towel. If the institution be supplied from the city water works, wash bowls should be discarded and the inmates bathe under spigots running water continually. The sink underneath will rapidly carry the water away. Moreover, cleanliness in all things must be scrupulously observed.

245 North Penn. Street.

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LARYNGEAL DIPHTHERIA.

J. W. BRUNKER, M. D., RILEY.

Laryngeal diphtheria has been the subject on which many able men have thought and written. Despite the labors of the surgeon, pathologist and general practitioner, it continues to claim its victims by the thousands every year.

If this paper will but fix the attention of the general practitioner and especially the attention of the "country doctor," to which class the writer belongs, and convince him that intubation is a safe, simple operation, that can be relied upon to save many precious lives, and in case of emergency may be performed without skilled assistance, it will have accomplished its purpose.

During the twelve years of my life as a physician I have been called upon to treat seventeen cases of diphtheritic croup. Of that number twelve cases proved fatal. Prior to the year 1891 I treated those cases according to the methods taught by the leading men of our profession with uniformly fatal results.

Since September, 1891, I have intubated nine cases, with four recoveries, or 44 4-9 per cent. The successful cases were as to age from eleven months to eleven years.

The youngest child was obliged to wear the tube thirty-seven days. I removed the tube and reintroduced it seven times, on account of recurring dyspnoea and cyanosis. The next to the last time the tube was extracted the child suddenly ceased breathing, became deeply cyanosed, the jaws set, and death seemed ready to close the scene. With its father's assistance I reinserted the tube and resorted to artificial respiration. The child rallied, and is to-day a fine hearty lad. While wearing the tube he cut four first molars and had an attack of bronchitis, brought on by his nurse allowing him to crawl out of doors on the snow.

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Two other successful cases wore the tube twelve days each, and the fourth retained the tube five days.

Of the fatal cases, four died of broncho pneumonia, and one of paralysis of the heart.

As to the technique of the operation I have little to say, further than that only a cool head, a steady hand, and a couple of stout-hearted nurses are requisite. Of course the operator should have a practical knowledge of the anatomy of the larynx in order to be able to guide the tube into the larynx without violence or too prolonged an effort. The peculiar sound of the air passing through the tube and the almost immediate relief to the difficult breathing show unmistakably that the tube is properly inserted.

The extraction of the tube is usually easily accomplished, if care is taken to guide the extractor into the opening of the tube. I have tried Cheatham's method of removal by compressing the trachea successfully, but prefer to use the O'Dwyer extractor as the less cruel of the two methods. In regard to the after treatment, spraying the throat with a 25 per cent. solution of the peroxide of hydrogen every two hours or even oftener will be found an efficient means of ridding the fauces of the tough muco-purulent secretion, which is very abundant for the first two or three days, and is a fruitful source of danger from suffocation, and suction pneumonia to the patient, and of anxiety to the friends.

Placing the patient on his side with the head lower than the body seems to favor drainage and will nearly always stop the coarse rales that are so distressing to the parents, when the patient is sleeping on his back.

Medicine and food may be administered with but little difficulty. Semi-solid food is readily swallowed. The deglutition of fluids will usually bring on a paroxysm of coughing, which is frequently beneficial by clearing the tube and air passages, but may be obviated to a great extent by placing the head on a lower level than the body, or, if the child is old enough, by letting him draw the fluid through a tube or straw.

I find it necessary in most cases to remove and cleanse the tube on account of a partial occlusion of its calibre from the inspiration of the secretions, in from four to six days, when if the dyspnoea recurs, it should be replaced.

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I have now accounted for all my cases of diphtheritic croup save one. In that case I do not think the slight cyanosis present made intubation necessary, although the child breathed very hard. So I administered 7 1-2 cc. of Aronson's antidiphtheritic serum, 1000 units strength, and the breathing began to improve in about six or eight hours. Membrane disappeared within four days. The child regained her voice in about a week, and seemed well.

One other case of croup was treated by the serum (1,500 units) injection. The child, aged ten months, had what the friends thought to be spasmodic croup; on Monday, gradually grew worse until Thursday following, when I was called in. I found the little patient in extremis, I told the mother to send for her husband, as her child was practically beyond man's aid. I injected 1,500 units Aronson's serum, and the child died in about eight hours, despite the free exhibition of stimulants. Five children, who had been in the company of this patient, took the disease in the ordinary form and all recovered.

In conclusion I will say that intubation is one of the crowning triumphs of the nineteenth century. Its originator's name is worthy to be inscribed with the names of Willliam Jenner, Louis Pasteur, McDowell and Sims as a benefactor of the human race, one who has placed within the reach of every true physician the means of saving to many a home the lives of its loved ones.

Intubation is destined to supplant tracheotomy as a means of relieving croup, and as a life-saving operation I have no doubt that it has saved more lives during the few years it has been practiced than tracheotomy has saved during the hundreds of years of its bloody history.

Let me repeat, gentlemen, that intubation is the operation for the general practitioner in the treatment of diphtheritic croup.

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SPECIFIC MEDICATION.*

B. VAN SWERINGEN, M. D., FORT WAYNE.

Mr. President, and Members of the Indiana State Medical Society: One of the most startling advances made in the progress of medicine in the last five years, has been the approach to specific medication by the employment of therapeutics of the extracts of healthy glands, and the serum of animals rendered immune to a certain disease as a cure for the same disease affecting the human family.

It would be idle, in the time at my disposal, to attempt anything like an exhaustive discourse on any one particular aspect of this subject, so great has its proportions grown during the past year, and I will therefore content myself with some general remarks on the subject which I hope will tend to point to what we may expect in the future, and bring the subject to your closer consideration.

To appreciate the therapeutics of gland extracts and to be able to apply them intelligently to diseases, as is the case with the therapeutics of any medicament, a full understanding of their physiological action must be had. It will become us, therefore, to consider for a short time the action upon the healthy organism, of extracts of the different glands, and the symptoms which follow their removal either by the knife or disease.

Until quite recently the function of certain glands of the body was entirely unknown, and others thought to be thoroughly understood have been found to be possessed of other and equally important functions. Thus, the liver and the pancreas are more important and essential to life by reason of their internal secretions than by virtue of the importance of their better known external secretions. This is shown in the case of the liver by the fact that the bile may be diverted

* Given as the Report of the Committee on Medicine.

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by a fistulous opening without interfering with health, yet its removal is followed by death by reason of the effect upon the metabolism of the body, due to the loss of its internal secretions. The same is true of the pancreas. And, strange as it may appear, the kidney is another instance, for it has been shown by Rose Bradford, that enough of the kidney substance may be left to carry off the excretory products of the body and yet the removal of the remainder of the organ may cause such disorganization of the nitrogenous metabolism as to lead to speedy wasting and death.

The salivary, mammary and generative glands, on the other hand, may be removed without causing any apparent disturbance of the body health, except what is produced through the nervous system by the removal of the last named organs. These latter changes, then, are not produced through the loss of some internal secretion to the blood, and in the case of the salivary and mammary glands, we may assume that if they yield a secretion to the blood it is not vital, or that their function is vicariously performed after their removal by other organs.

In the case of the pancreas it may be well to lay particular stress upon it as one of the causes of glycosuria. Frerichs found that 20 per cent of the total number of cases of diabetes which came under his notice, were accompanied by obvious changes in the pancreas.

Rokitansky found that in thirteen out of thirty cases the pancreas "was strikingly small, hard, and bloodless, and in many cases it has been found so shrunken and altered as to be hardly recognizable, save by its connections." (Silver.) Claude Bernard failed to successfully remove the pancreas. Von Mering and Minkowski succeeded in so doing in 1889. Its removal was followed by the appearance of sugar in the urine in a very few hours to the extent of from 5 to 10 per cent. The complete removal also is followed by polyuria, rapid wasting, and death in fifteen days or less. This result is not, however, due to the loss of the pancreatic secretion for the pancreatic juice may be diverted by a fistula, or the duct of Wirsung may be injected with paraffin and the animal remain in perfect health. Injection of the duct, although it produces atrophy of the secreting cells, is not followed by diabetes as after complete removal. It has been found by Schafer that the cause of this is the activity of certain

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islets of epithelial tissue of exceeding vascularity, which are not part of the secreting apparatus of the gland, and which evidently furnish the blood with some internal secretion which profoundly affects the carbohydrate metabolism of the tissues.

In the consideration of the thyroid, we do not have to take into account a double action or function. Complete removal of this gland is followed by the infiltration of mucin throughout the subcutaneous connective tissue and the production of the condition known as myxoedema. Schiff, after sixty thyroidectomies on dogs, reports the operation as speedily fatal, preceded by tremors, spasms and convulsions, symptoms which point to a serious derangement of the nutrition of the central nervous system. When an extract of the gland is given to animals it produces a distinct action on the blood vessels, so that the pressure markedly falls, although the beats of the heart remain the same in strength and rate. This lowering the pressure without influencing the action of the heart can only be explained in one way, i. e., by increasing the calibre of the arteries. Oliver discovered that given to man the juice or extracts of the gland has a tendency to increase the calibre of the radial artery. Lorrian Smith found that in animals which have been deprived of the thyroid the reaction to changes of temperature was abnormally rapid. When normal animals are exposed to a cold atmosphere the production of carbonic acid becomes increased consistently with the increased oxidation which is necessary to cause an increased production of heat, but this increase of carbonic acid does not take place immediately, but only comes on after a certain period of time, the temperature of the body being in the meantime maintained normal by those physical changes which occur in the circulation and which allow the quantity of blood brought to the skin and the amount of heat lost thereby to be varied. Now, it is precisely these vasomotor changes which appear to be lacking after removal of the thyroid, for the production of carbonic acid becomes almost immediately increased by exposing thyroidectomied animals to a low temperature. If a piece of thyroid be grafted in the peritoneal cavity after complete removal of the gland in the neck, these changes do not follow, and it is certain from this and other considerations that the gland manufactures a secretion which is essential to the normal

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metabolism, and that its function is not to remove toxic substance which tends to accumulate in the blood (autoxication), or that the changes which ensue upon its removal are due to disturbance of the nervous connections in the neck.

The pituitary body is another organ which furnishes an internal secretion to the blood, which is essential to the physical well-being. Its anterior lobe is composed of a structure which may be described as glandular. When the organ is removed death results within a fortnight of the operation, preceded by diminution of the body temperature, anorexia and lassitude, muscular twitchings and tremors, developing later into spasms and dyspnoea. Some of these symptoms, especially the muscular twitchings, are similar to those seen after thyroidectomy, and Rogowitsch has supposed from the fact that in rabbits a thyroidectomy commonly fails to produce the usual results, and that after a thyroidectomy the pituitary body becomes enlarged, that there is a similarity of action and function between the two and that the large size of the pituitary in rabbits explains why they are commonly exempt from the results of a thyroidectomy, which is, that the pituitary takes on vicarious action. Schonemann, however, got no distinct evidence of its enlargement in many cases of goitre which he examined. And, to dispute the theory of vicarious action between these two glands, the results of disease of the two is cited, enlargement and degeneration of the thyroid being accompanied by cretinism and myxoedema, and enlargement and degeneration of the pituitary by hypertrophy of the bones of the extremities and face, with some hypertrophy of the skin and mucous membranes, but without mucoid degeneration. When a decoction of the pituitary gland is exhibited great augmentation in the force of the heart's beat, without any accompanying acceleration of the rate, is seen, accompanied by a rapid rise in blood pressure, which is due to contraction of the arterioles, produced by direct effect of the extract upon them. It is inferred, then, that the pituitary body furnishes an internal secretion to the blood, which tends to increase the contraction of the heart and arteries, and to influence the nutrition of some of the tissues.

In 1885 Addison pointed out the symptoms of a disease which bears his name, and indicated the immense importance of the supra-

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renal capsules to the general nutrition. When these glands are removed extreme muscular weakness rapidly follows, accompanied by great loss of tone to the vascular system, loss of appetite, nervous symptoms, and other signs of general prostration. The pigmentation does not appear so marked, if at all, owing to the rapidity with which the changes take place, usually a period of three or four days.

According to Schafer and Oliver the medulla of the supra-renal capsules contains a dialysable organic principle, soluble in water, and not destroyed by boiling for a short time, which produces a powerful physiological action upon the muscular system in general, but especially upon the skeletal muscles, the muscular walls of the blood vessels, and the muscular wall of the heart. A certain amount of action is also manifested upon some of the nerve centers in the bulb, especially the cardio-inhibitory center, and to a small extent upon the respiratory center. In the frog, under the influence of the extract, in response to an electrical stimulus, the muscle responds quickly, but the contraction is greatly prolonged. Upon the heart with the vagi uncut and the cardio-inhibitory center still operating, the effect of the extract is to slow or stop the contraction of the auricles, while the ventricles continue beating. With the vagi cut or paralyzed by atropin the strength and frequency of the auricular contractions are markedly increased and those of the ventricle correspondingly augmented. The blood pressure is not, of course, increased, but this is not only due to the increased cardiac power, but to a direct effect upon the arteries (contraction), for even with the vagi uncut an injection of the extract causes the pressure to rise considerably. In man the extract causes diminution in the size of the arteries, and consequently rise of pressure. From these and other experiments, which we must forego the pleasure of detailing, it is almost certain that the supra-renal bodies furnish an internal secretion to the blood, which, although present in that fluid in very minute quantities, may yet be sufficient to produce an effect which is beneficial for the performance of the functions of the muscular tissue, and especially the muscular tissue of the vascular system.

This comprises all of the glands which it is worth our while at this time to study, and I want to invite your attention to another branch of the subject indicated in the opening sentence, before proceeding with the therapeutics of these substances, namely:

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At the threshhold of an inquiry into the subject of serum therapy one is met with the necessity of a clear understanding of the meaning of immunity, for a proper comprehension of this condition is essential to our appreciation of the merits of a therapeutic agent in some diseases, and of what may be expected from the rendering of a specimen of the genus homo exempt from a specific disease after or before exposure.

Immunity may be defined as a condition of the system which is prejudicial to the life and development of certain pathogenic micro-organisms. This condition may be either natural or acquired. Natural immunity is exemplified frequently in the difference in the degree of susceptibility shown between man and the lower animals. Thus tuberculosis is common to man, cattle, and the herbivora, while the carnivora are seldom affected by it; anthrax may be communicated by inoculation to man, cattle, sheep, guinea-pigs, rabbits and mice, but the rat, dog, carnivorous animals and birds are generally immune. The adult is more immune to varicella, scarlatina, diphtheria, and the like than is the child, even though his immunity may not have been acquired by a previous attact of the disease. Races vary in their susceptibility to different diseases. It is a notorious fact that the Caucasian race is more immune to tuberculosis than the negro race, and, according to Sternberg, Algerian sheep are very immune to anthrax, a disease very fatal to other sheep. The condition of the system as to health is an important factor in immunity, a person succumbing to a disease when under the influence of cold and fatigue or of other disease, when in health the system would be capable of throwing off or neutralizing the materies morbi.

As to the manner in which this so-called immunity is obtained opinions differ. Metchnikoff has elaborated a theory, based upon the conduct of the leucocytes, as seen on the stage of a microscope, when coming in contact with certain bacteria, which is generally known as phagocytosis. It makes the leucocyte the defender of the system against the invasion of any foreign foe, and the defense may be and has been likened to a battle royal between the invader and the invaded.

Sternberg claims, however, the priority of this theory, but acknowledges that Metchnikoff has been its principal defender. The

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latter got his idea from watching a species of daphnia battle with a torula. The fungus gained entrance through the intestinal tract, and pierced the wall of the intestine, only to be grappled with by the leucocyte, who called to his aid numerous companions. The battle royal continued until one or the other was destroyed.

Not all pathogenic germs are destroyed by the leucocytes, however. Many, after gaining entrance and being attacked by the leucocytes, make food of them and continue to live and breed.

It has been found also that it is not alone due to the activity of the leucocytes that bacteria are destroyed. The serum of some animals, which is devoid of corpuscular elements, is alone insufficient to destroy some bacilli. This was first shown by Buchner in 1889, who called these destructive substances found in the serum the alexins.

Hankin named them the defensive proteids. They are supposed to be derived from Ehrlich's eosinophil granules, which are a variety of leucocytes.

That the theory of plagocytosis is not alone sufficient for the explanation of immunity is shown from the experiment of taking the serum of an animal immune, for instance, to anthrax, and injecting it into the blood stream of an animal to whom anthrax is very fatal, when it will be seen that the injection of an anthrax culture is not followed by the death of the susceptible animal. The reason it is not then is clearly because of some substance which has been introduced with the serum, for were the immunizing serum not injected the animal would have died in spite of the activity of the leucocytes.

These defensive proteids, as has been before stated, are found to be derived from white corpuscular elements of the blood. Vaughn claims to have demonstrated that they are derived from the nuclei of the white cells, and therefore calls them nucleins, and upon this theory it has been explained that the aggregation of leucocytes around a bacterial invader does not uphold the theory of phagocytosis, as promulgated by Metchnikoff, but that by the disintegration of these corpuscles these nucleins are formed to destroy the germs, the action being much the same as is seen in the production of fibrin, which is not normally present in the blood, but which is

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formed when the inhibiting influence of a sound intima is removed out of the corpuscular elements.

Acquired immunity is obtained in a different manner and has for its basic principle the production of a substance within the infected body or the introduction of a substance which has been produced in some other body which shall be an antidote to the poisons which are produced by the invading bacteria. These substances are called the antitoxins. They neutralize the toxins, or render the tissues capable of resisting their action. The length of time at which an acquired immunity is operative varies with the disease. In smallpox, syphilis, scarlatina, etc., it is usually long. In certain other diseases, as pneumonia, diphtheria and tetanus, an artificial immunity acquired either by the survival of an attack and the accumulation of home-made antitoxins, or by the injection of antitoxins, experimentally prepared, is usually of short duration.

Unlike the causes of natural immunity this cause of acquired immunity is operative only against its specific bacterium, and unlike natural immunity it can be transferred from one indivdual to another.

In regard to the orgin of antitoxins they are probably derived from the bacteria. (Buchner.) There is, of course, a different antitoxin for each germ, and the antitoxin for the Kleb's bacillus will not operate against the Nicolair bacillus, nor will the antitoxin of any germ operate against any other. This fact may be held accountable often for reported failures in the treatment of diseases by antitoxins, the death in a case of diphtheria, for instance, often not being due to the effects of the Klebs baccillus, but to an infection by streptococci and pus germs.

We may inquire very briefly at this point into another aspect of this subject, namely, the practical.

What good has been accomplished by this knowledge?

We have only time to pass in hasty review some of the conditions in which one or another of these products have been used and found beneficial, deleterious or without effect.

In regard to extracts of the different glands, we may mention that the extract of the thyroid, one of the first to be used, has been found useful in goitres, in various diseases of the skin, notably

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psoriasis and keloid; it has been found useful by a few in cases of Grave's Disease and has been condemned as harmful in this affection by others; it has according to J. Quinn (Medical Record, Nov. 30, 1895) been successful in causing the disappearance and cure of uterine myomata and fibromata; it prevents the development of mucous disease following thyroidectomy invariably.

The pituitary body has as yet been but little employed, and it is yet too early to speak of the results of its administration; a priori it would seem indicated in acromegaly and other trophic disturbances.

The use of the adrenals has been carried on to a small extent, especially in Addison's disease, and Stockton, of Buffalo, reports a case in which great improvement followed their administration. How their use can be curative in tuberculosis or carcinomatous affections is more than I can comprehend on theoretical grounds. It is conceivable, however, that symptoms which develop, due to the loss of the blood of the secretion of these glands, may disappear when it is artificially supplied, and to a non-malignant disease it may even be curative.

Extracts of the pancreas have been used in pancreatic diabetes with reported good results.

Extracts of the spleen, and, indeed, extracts of all tissues, have been given experimentally, and conclusions have been in many instances arrived at, but it will be impossible for us to review them further.

With regard to the use of serums much advance has been made. Maragliano and some of his confreres are using a serum, prepared by himself, for tuberculosis, with reported good results in cases in which no destructive foci exist. His serum presumably contains tuberculosis antitoxins. He emphatically declares that antituberculous sero-therapy can be of use, and can be reasonably expected to effect a cure in the above class of cases. Paquin, also, has treated a number of cases of tuberculosis with reported good results by a serum of his own, but from the cases reported I do not think his conclusions are warranted.

Several cases of tetanus have appeared during the year as having recovered under the use of a serum containing tetanus anti-

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toxin, and this bids fair to become essential to the treatment of this disease. Graeme M. Hammond has collected the details of fifty cases treated by antitoxin with only sixteen deaths, a mortality of 32 per cent. This is much better than is obtained by any other known method.

Syphilis has been treated by antitoxin with good results in some cases and negative results in others. The serum of animals naturally immune to the disease has been used, also that obtained from persons who have recovered from the disease.

Pio Foa obtained an antitoxic serum to the pneumococcus, which, when injected into rabbits, enabled them to withstand a dose of 160 cc. of a culture sufficiently virulent to kill a test animal in a few hours. The serum has not yet to my knowledge been used on man. The rabbits were rendered immune for a period of three months.

Streptococcus infections (notably erysipelas and puerperal septicaemia) have been treated with an antitoxic serum with sufficiently encouraging results, according to Maragliano, to warrant further trials, and other men have reported successes in desperte cases from this treatment.

A typhoid antitoxin was produced by F. Klemperer and Ernest Levy, and used on five patients in the first week of the fever in the dose of 20 cc. for three successive evenings. It was well borne and complete apyrexia followed at the end of the second or beginning of the third week. The cases were mild, however, and are thought by the authors to prove nothing.

Much interest has been aroused in the treatment of inoperable malignant growths over the effect of a serum containing the toxins of the eryysipelas germ and the bacillus prodigiosis. Coley is supported by Emmerich and Scholl in his statements of the benefits derived from his use of the serum, by recoveries of their own. Their results, however, are in direct antagonism to those obtained by Senn, who claims failure in each case, and condemns the treatment. Coley claims most benefit is derived in sarcomata, but that oftentimes carcinomata are benefited also. The serum is being tried in this city, but the cases are as yet too young to report upon.

The literature on the diphtheria antitoxic serum, pro and con,

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has been very voluminous, and it can not be here analyzed. The weight of opinion, however, is decidedly in favor of its continued employment. There have been several accidents attending its use, which have had a restraining influence. They have not destroyed the confidence of the profession in the efficacy of the serum, for almost every measure that is at all potent for good is capable of some harm.

From a careful study of the literature of the year on these subjects, it must be apparent that a vast field yet remains to be explored and the indications are that discoveries will still be made along the line of specific medication.

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REPORT UPON THE PROGRESS OF BACTERIOLOGY.

THEODORE POTTER, M. D., INDIANAPOLIS.

The past year, like those which have immediately preceded it, has been prolific of investigations and progress in the broadening field of bacteriology. More and more we see the study of the disease germs resulting in additions to our knowledge of diagnosis, treatment and prevention of the infectious processes. It is becoming more reliable and relied upon, in clinical as well as pathological diagnosis. It is becoming a more and more important part of sanitary science and preventive medicine. In the field of therapeutics it is opening up lines of investigation and experiment which are full of promise. No intelligent person any longer looks upon bacteriology as a fad or fashion. It has become in a hundred ways too well established and of too much practical value for any such view.

At the time of my last report the subject of the antitoxin treatment and serum therapy was attracting universal attention and interest. Everyone was watching it and eagerly asking what was to come of it. This interest, though quieter, is none the less intense, and current medical literature has fairly overflowed with discussions upon the new treatment as applied to several diseases, chiefly to diphtheria. It may be helpful to you if I summarize briefly the best present views upon this subject.

First, then it appears to be generally agreed that diphtheria is a specific disease, due to a specific and recognizable microbe. The methods of recognizing and identifying this microbe have been well worked out, and it has therefore come to be relied upon as the most valuable because most positive means of diagnosis. The germ of diphtheria is one easily cultivated, and growing rapidly as it does, under proper conditions, its recognition may be made the basis of diagnosis for practical purposes. Diphtheria being a dangerous

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disease in a community, and its identification being of so much importance, health boards have in increasing numbers equipped themselves for doing this work in the interest and for the protection of the public health. Already at least two cities in this state have well-established departments in which the bacteriological diagnosis of diphtheria is made, and their results agree with those in other cities in testifying to its value and accuracy. And no practicing physician who has once had within his reach and has made use of these aids to accuracy in his work, will fail to appreciate the comforting assurance of their presence. No physician who has a few times experienced the relief of anxiety and uncertainty in doubtful cases will fail to acknowledge himself and his patients debtors to the science of bacteriology.

Second, the long-debated question of the relationship of diphtheria and membranous croup has been approaching a solution upon a basis which appears to be reliable. It does seem as though we should soon have a definite and positive answer to this vexed question. Extensive and accurate investigations have clearly proven that a large proportion—about 80 per cent.—of the cases ordinarily reported as membranous croup are membranous laryngitis, due to the poison of diphtheria. Acting, as they must, upon this demonstration, health boards are now coming to be almost unanimous in requiring a report of such cases, and in dealing with them as diphtheria. The presumption must be that at least the great majority of them are diphtheria. Clinical features, which still seem to sustain the doctrine of duality, there may be in some cases; but when from many of even such cases the microbes of diphtheria are obtained and being cultivated and inoculated, show their infectious quality, then, in the language of Virchow, as applied to antitoxin, theories must give way to the brute force of facts. Physicians, therefore, whatever their individual views as to membranous croup, should recognize the force of the facts, and should cheerfully support the health boards in following the course which is evidently the one of wisdom and safety.

At the same time it is to be said that, just as there are now known to be cases of membranous pharyngitis resembling diphtheria, but not due to the diphtheria germ, so there may be, and probably are, cases of membranous laryngitis now—diphtheritic in character. And

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so the old question is not yet fully settled. The immediate future, we can hardly doubt, will bring the full and satisfactory solution.

Third, as to the antitoxin treatment of diphtheria, much as the writer might be disposed to give it a large place, he cannot but feel that it belongs now so much to clinical medicine as to make an elaborate discussion of it somewhat inappropriate in this report. Some thing, however, ought to be said about it, since it is entirely an outgrowth of bacteriology.

In the report of last year emphasis was laid upon the importance of getting a clear view of the established facts as distinguished from the theories, and of keeping these facts in mind as a guide to right-thinking and acting. At that time the things which we seemed warranted in accepting as demonstrated were these: that there is a germ in diphtheria, which being inoculated in pure cultures, will kill; that this germ, being artificially cultivated, produces an intense poison which will kill; that, by the injection of gradually increasing quantities of this toxin into certain animals, they may acquire an enormous resisting power to it and to the germs; and that by the transfer of their blood serum this resisting power might be transferred for a limited time to other animals, and be for them an almost specific preventitive of diphtheria and almost equally specific cure of the disease in its earlier stages. These, which seemed a year ago worthy of acceptation as demonstrated facts, remain as they were, though their explanation still eludes us.

The chief theories in explanation of these facts are two: first, that there is in the antitoxin serum a substance which directly antagonizes the growth of the germs or neutralizes the toxin, or both; second, that its action is biological, rather than chemical, stimulating the body to an increased resistance. There are strong arguments in favor of each view, but we are not yet in a position to decide the question.

Meantime, the treatment has been applied in many thousands of cases, and what of the results? Statistics from many sources have been and are constantly being published, and of their value and significance you are as capable of judging as the writer of this report. It must be said that the weight of opinion is in favor of the treatment. Certainly the majority of those who have used it extensively believe it to have given results surpassing those of anything

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heretofore known. Perhaps the best summary of the whole matter is that published by Welch, of Johns Hopkins University, and widely quoted. His conclusions are that the antitoxin is of great value, is comparatively harmless, and that it is our duty to use it. As a matter of record the following extract from Dr. Welch's paper is here given place:

In Dr. Welch's contribution, an analysis of 7,166 cases of antitoxine treated diphtheria is reported from the hospitals of Germany, France, Austria and America. From a careful study of these cases, and from a thorough sifting of all the evidence, the figures show a mortality of 17.3 per cent.

Along side of these cases, and in the same hospitals, with the same favorable surroundings, 5,706 cases of diphtheria were treated by the old method, with a death-rate of 42-1 per cent.

There was, therefore, says Dr. Welch, an apparent reduction of case mortality by the use of antitoxin of 55.8 per cent.

Statistics, according to the age of the patient, both with and without the serum treatment afford very interesting reading.

From a summary of this table, Welch says: "Of 1,729 cases of diphtheria with a fatality of 14.9 per cent., 1,115 cases treated with antitoxin during the first three days of the disease yielded a fatality of 8.5 per cent, whereas 546 cases in which antitoxin was first injected after the third day of the disease yielded a fatality of 27.8 per cent.

Of 232 in which treatment was begun on the first day five died, or 2.15 per cent. Of 492 cases in which treatment was begun on the second day 30 died, 7.7 per cent. Of 331 cases in which treatment was begun on the third day 43 died, 13 per cent.; on the fourth day 19 per cent., on the fifth day 29.3 per cent., on the sixth day 34.1 per cent."

In closing his report Dr. Welch makes this statement. "The principal conclusion which I would draw from this paper is that our study of the results of the treatment of over 7,000 cases of diphtheria by the antitoxin demonstrates beyond all doubt that antidiphtheritic serum is a specific curative agent for diphtheria, surpassing in its efficacy all other known methods of treatment for this disease."

There are occasional unpleasant effects in the form of more or

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less intense erythema, sometimes with fever, severe pains, glandular swellings, and even effusions into joints or serous cavities. A few serious accidents and even deaths have followed the antitoxin, and apparently due to the injections. Just what these accidents mean, and whether they are inseparable from the antitoxic serum, we do not know, but they serve to make us properly cautious, and warn us not to accept too readily the assurance that, even under the most extreme precautions of preparation, such an agent is always and wholly free from danger. The good appears to over-balance any evil, but we are not yet sure that there is no possibility of harm.

Diphtheria is not the only disease in which antitoxic serum therapy has been applied. The principles of production and use being established, the endeavor is constantly being made to extend its sphere. Indeed, the tetanus antitoxin preceded that of diphtheria, and in animals experimented upon in the laboratory, seems to have been equally successful. For obvious reasons, however, its clinical application has not been as extensive nor apparently of as much value. A tetanus antitoxin is now within the reach of physicians and is certainly worthy of trial, at least in the early stages of lockjaw. According to all who have had experience with it, it must be given in large doses and as early as possible in the disease. If possible it should be used as a preventive after a suspicious injury.

For pneumonia, typhoid fever and tuberculosis antitoxic serums have been prepared and have been used in a considerable number of cases, and in several other diseases they have been and are being tried to a limited extent. It is too early to form any reliable opinion as to the value of the treatment in these diseases. The serum treatment of tuberculosis has been given a sufficient trial to show that at present not much can be expected from it.

As to tuberculosis, the greatest of the serious diseases with which we have to deal, each passing year is bringing out in bolder lines the proof of its infectious character. Personally, the writer grows more and more convinced of the truth of this view, and of the importance of action based thereupon. Of this he has something to say in another paper presented at this meeting.

Cholera has been the subject of a large amount of investigation during the past year, the result of which has been to emphasize

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its water-born character in many if not most instances, and to make easier and more reliable the bacteriological diagnosis. The preventive inoculations against cholera have been carried on upon a larger scale by Haffkine in India. His recent report is a model of scientific spirit and work, and appears to justify a hopeful view of the measure. His investigations will be continued under government aid, and we shall look with interest for the publication of results from time to time.

The injection of the erysipelas toxin in malignant disease has been continued by many observers in this country and in Europe. It still appears from this experience that the treatment does have considerable retarding or curative effect in sarcoma, but little if any in carciaoma. In general, however, there seems to be less promise in the measure than a year ago.

The influenza bacillus seems to have established itself in the opinion of most bacteriologists as the true germ of la grippe, and several observers have expressed a high opinion of its diagnostic value.

The subject of cancer and its possible microbic origin has engaged the attention of many investigators, and various claims to a discovery of the specific causative agent have been made. But most of the so-called cancer germs have been shown to be only bodies appearing during and resulting from the normal or abnormal cellular changes which occur in or about the growth. The germ of cancer, if such exist, has not yet found an established place in bacteriology. From the far west, from the rising empire of Japan, comes the news confirming that announced before, that Kitatsato had discovered, cultivated and proven the specific character of the microbe of the bubonic plague, which has raged in China during the last two years. And thus another mark of honor has been won by the already famous Japanese, who a few years ago was a favorite pupil and assistant of Koch in Berlin. And thus, too, peace and science have their victories there as well as war.

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ONE NECESSITY IN THE PROPER TREATMENT OF INEBRIATES.*

H. J. HALL, M. D., FRANKLIN.

No man who is addicted to the chronic use of alcohol or opium possesses a healthy body. And those medical men who have frequently witnessed post mortem examinations on the bodies of inebriates do not doubt that inebriety is a disease. The cirrhosed liver, the hypertrophied kidney, the atrophied secretory glands, the degenerate cerebral nerve cells, pulmonary intersticial hyperaemia, etc., all indicate an unmistakable pathological condition.

In treating these chronic invalids, the physician has in the past had very unsatisfactory results. Why? There are more reasons than one, but the chief one that I wish to emphasize, is, that the physician has not had proper control of his patient. And the chief difficulty with the patient, has not been so much himself, as with his environments—and the retarding influence of his environments have excreted over his recovery. Seldom would you find a community that would sanction the arrest and imprisonment of a man because he had taken a narcotic of opium. But it is a daily occurrence in every city, to see men arrested and taken to prison, for no other reason than, that they had taken a narcotic dose of some alcoholic preparation, that rendered their pedestrian equilbrium unsatisfactory to the police.

Humanity and science would both say, that such cases should be taken to a hospital and treated for narcotic poison, in place of being taken to prison and confined with criminals. What this good state needs for the proper treatment of alcoholism, is more hospitals and fewer jails. And much of the money that goes to policemen

* Report of Committee on Inebriety.

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and jails should go to physicians for the proper treatment of these unfortunates. As the inebriate is a diseased man, he needs curative treatment. In the past he has not received much successful treatment. His surroundings have been overwhelmingly helpful to the continuation of the disease. As well expect to treat successfully typhoid fever in a community where the patients and well people all drink water impregnated with typhoid fever germs, as to expect to treat successfully inebriates when those persons are surrounded by saloons and saloon-drug-stores.

Much effort has been put forth in the past to remove the cause of inebriety from the man. This effort has not been very successful. Now, we propose to remove the man, that is the diseased man, the confirmed inebriate, from the cause. As to the cause continuing and making more diseased men, we as doctors have to deal with that only as preventive medicine—a field that doctors have been permitted only slightly to occupy. But this much the doctor does demand—he demands an opportunity to treat his patient under at least favorable circumstances. With the inebriate it is necessary that he be removed from the cause of his disease. This is as necessary with inebriety as it is in septicemia. How is this to be done? My answer is, we must have the assistance of law. The doctor must call on the legislator to aid him in making his work more effective in the prevention and cure of disease.

When our country is threatened with cholera, the law-making power places a quarantine, keeping those affected beyond our shores, and the law is obeyed. When a city is scourged with small-pox, the law removes the afflicted to the pest-house, and compels the inhabitants to be vaccinated. And all concede that this is a just law, and for the good of the public welfare and public health. So here is a class of afflicted citizens—diseased in body and weakened in mind. They can be cured, at least more than 50 per cent of them, when placed under the best care of the medical profession, and under the most favorable circumstances. But the fact is, a very small per cent. of them are cured. When these inebriates are permitted to stay where the cause of the disease is fully operative, and where they are environed by influences that aggravate the disease, rather than aid their recovery, we need not expect valuable results. Hence, if the

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science of medicine ever cures this class of invalids, produced by alcohol and opium and other narcotics—as they are doing—they must have the aid of the law, like they now have in treating insanity and other diseases, in which environment is of special importance, and where the health and public welfare is an important consideration.

Some states have good laws, and some nations have laws that are more or less effective. Massachusetts and at least one other state have quite effective laws, establishing hospital care and treatment of inebriates.And Great Britain and some of its provinces have made a small beginning in this direction. The Massachusetts state law, perhaps one of the best in this country, requires very much the same process for the commitment of an inebriate to the state hospital as is required to commit an insane person to the insane asylum.

As to this law: First, the certificate of two physicians being filed, that the person's condition requires his treatment at the hospital for inebriates—this, with oral testimony being submitted to the county or police judge, he passes upon the commitment of that person to the hospital.

Second, the time for which these persons are committed to the state inebriate asylum is two years. But if the condition of the patient and his home environments are considered safe by the superintendent and trustees of the hospital he is given a leave of absence, but may be returned any time within two years.

Third, such inmates of the hospital for inebriates, as are able to pay for their board shall be charged for the same. The board of others shall be paid by the city or county in which they reside, and in case of no residence their board shall be paid by the commonwealth.

The other state of our union that has a similar law, and even better in some respects than the Massachusetts law, is Connecticut. Great Britain has nine private inebriate asylums, Australia two, and Ontario one. Recently Switzerland passed a law, establishing an inebriate asylum, and the minister of justice recently placed such a law before the Austrian parliament.

The natural inquiry arises, what is the result of the treatment in these hospitals or asylums? The Walnut Lodge Hospital, of Connecticut, one of the oldest and most reliable institutions of the kind

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in the world, which is superintended by Dr. Crothers, an honored member of the American Medical Association, reports 54 per cent. cured, 32 per cent. improved, and 14 per cent. unimproved.

Professor Albutt, M. D., who has had large experience in caring for inebriates in Great Britain, says that more than 50 per cent. can be cured by proper treatment and stay in retreats.

Dr. Norman Kerr, who is, perhaps, as near up-to-date authority on this question as any other man in the medical profession to-day, says: "When inebriety is rationally treated, the cure is a reality in most cases."

As the Keeley Cure has been used in a number of our Soldiers' Holmes, under the sanction of our government, it leads us to say a few words of the Keeley treatment. They claim to cure 87 1-2 per cent. Undoubtedly a number of inebriates have been cured by this treatment. All honor to Dr. Keeley and his co-workers for whatever good they may have done. Outside of soldiers they claim to cure 90 per cent., but they do not publish statistics to prove these surprising figures. My limited observation teaches me that they cure about 25 per cent. They claim to cure their cases in from four to six weeks, while the regular profession, in treating these cases scientifically, claim it takes from six to thirty-six months. No man who has a granular degenerated kidney or a fatty heart or a cirrhosed liver from the use of alcohol, can have those organs transformed into a physiological condition in four to six weeks. And herein lies the great weakness and fallacy of the Keeley Cure. You cannot cure a chronic inebriate in five weeks and make him a safe man for society and business.

If we desire growth in any department of our profession we must face facts. And one of the facts, in this question is that Dr. Keeley has induced seven legislatures to pass laws sanctioning and assisting his secret unscientific treatment of inebriates; while the regular medical profession has secured the sanction and assistance of only two state legislatures for the scientific treatment and cure of inebriates.

This, ladies and gentlemen, is because the members of the medical profession are too slow in asking the law-makers of the various states for the aid they need to properly treat this class of patients.

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Think for a moment—800,000 diseased men in our nation, as shown by the number of arrests for drunkenness in one year, and over 20,000 in our own state—and this, too, when the firm conviction abides in the minds of our doctors, that these chronic invalids, or a large per centage of them can be cured with the aid of the law and a hospital home.

We believe the time has come for the physicians of Indiana to ask their legislature to make provisions for the proper medical treatment and care of the inebriates of our state.

Your committee on alcohol and opium closes its report, therefore, with this recommendation:

That a committee of five members of the Indiana State Medical Society be appointed to endeavor to secure the passage of laws by the next legislature to aid in the proper treatment and care of chronic inebriates, and those addicted to the opium, chloral, and other drug habits.

Respectfully submitted by your committee,

HOMER J. HALL, Chairman;
GEORGE C. STEMEN, Secretary;
G. C. SMYTH,
W. J. FAIRFIELD,
W. B. FLETCHER.

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THE MEDICAL ACT OF INDIANA.

WILLIAM P. WHERY, M. D., FORT WAYNE.

Most of the papers read before medical societies are devoted to subjects connected with the science of medicine. But a small part of the time of these assemblies might profitably be given to the relations of medical men to the public and to each other. These relations are, of late years, gradually becoming legalized and definite through the operation of medical acts passed by the several states' legislatures. Our concern now is with the Indiana act, and the purpose of this paper is to indicate some of its defects, and, perhaps, to suggest remedies.

The chief defect of this medical act is that its whole administration is entrusted to the county clerks, who neither know nor care anything about the status of applicants for licenses, taking no trouble to prevent fraudulent claims, but licensing all applicants who make the required affidavit. The remedy sugested is to require the application for a license to be indorsed by the county board of health before it is acted on by the county clerk.

Another defect is the lack of some provision for the registration of the qualifications of the licensed medical practitioners of the state. Registration is the business of the boards of health of the state and the counties. Each county board should keep its local register, and the state board should compile a general register for Indiana, and there should be an appropriation for the annual or biennial publication of the same.

The fee paid in most counties for a license is three dollars, which is excessive for the merely perfunctory work done by the county clerk. In other states half a dollar is deemed ample remuneration for issuing a license. The clerk's fee should be re-

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duced to this sum in Indiana, but the additional fee of one dollar should be paid to the county board of health for indorsing the application for a license, and for registering it when granted.

The next defect to be noted is that there is no legalized body charged with the supervision of medical study and practice in this state. It is suggested that the State Board of Health is the proper body to discharge this function. It should be empowered to decide questions regarding licenses and registrations, and to approve the curriculum of each medical college in the state as adequate for a thorough medical education. It might also make a list of medical colleges outside of this state which have a satisfactory curriculum.

In admitting names to the general register, the practitioners already licensed would be first enrolled, then the graduates of medical colleges chartered by the State of Indiana would be admitted to registration; and finally, graduates of colleges outside of Indiana would be registered, after passing an examination for a license. This principle of a state examination of practitioners proposing to settle in Indiana is a new one in this state. It may be alleged that the graduates of some institutions of very high character in other states should be exempt from examination. But as these states treat Indiana graduates, so must they expect their own graduates to be treated. Nevertheless, the state board should have power to dispense with the examination of graduates of outside colleges approved by itself, or of graduates from other states that reciprocate this courtesy.

The examinations should be conducted by boards of examiners elected by the state medical associations of all the different schools of medicine. These boards of examiners should be confirmed by the State Board of Health, and should report to it. There should be a distinct board of examiners for each school of medicine represented by chartered colleges in this state. This would prevent any trouble such as might be occasioned by a mixed board. If the convenience of applicants for examination should be consulted, the state board of examiners could be divided into three sections—north, central and south—and the counties of the state could be divided into three corresponding zones, centering respectively at Indianapolis, Evansville, and Fort Wayne. A practitioner wishing to settle

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in a county belonging to any of these zones would be examined by the section of the board belonging to that zone, and by the board of the school of medicine to which he belongs. A fee would be charged for this examination. And the board would then report to the State Board of Health, and to the board of health of the county in which he intends to locate, the result of the examination.

It is inadvisable to load a medical act with too many minute provisions, or to bring forward too many amendments of the act at any one session of the state legislature. Further amendments, after full discussion by the profession, may be pressed on the legislature from time to time. The amendments here suggested are designed to introduce three new principles in the Indiana medical act: Firstly, the establishing of a perfect system of medical registration; secondly, the creation of a supervising medical authority—the State Board of Health; and the provision of a board for medical examination, subordinate to the board of health, but elected by the associations that represent the whole profession. These amendments are primarily for the benefit of the people of Indiana, and secondarily for the benefit of the medical practitioners of the state. And the enlargement of the powers of the Board of Health is especially in conformity with the trend of modern progress in medicine; while the recognition of the state medical associations in relation to the board of examiners connects the profession as a whole with the administrative machinery of the state.

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EXPERT EVIDENCE AND CORONERS.

GEORGE R. GREEN, M. D., MUNCIE.

As early as A. D. 1400, medical experts were used in courts of justice. This right to introduce expert evidence in certain cases has been so long in use and is so firmly fixed as to be a setttled fact in law, and needs no comment. Usages, however, and the methods of procuring and introducing such evidence in our courts, require some attention from us as medical men.

The intent of such evidence is to enable courts and juries to form a rational and intelligent basis for judgment upon the medical questions, about which they previously knew but little or nothing. The standard, at first high indeed, and to which only the really expert could attain, has been gradually lowered until now "medical expert evidence" is scarcely spoken of by courts or lawyers, except in terms of derision.

Best, in his "Evidence," says: "It would not be easy to overrate the value of evidence given in many and delicate inquiries, not only by medical men and physiologists, but by learned men in various branches, arts, etc. This is the ideal. But again we find that Justice Davis, of the Supreme Court of Maine, says: 'If there is any kind of evidence that is not only of no value, but even worse than that, it is medical expert evidence.'"

Another, Chief Justice Chapman, of Massachusetts, says: "It often happens that experts can be found to testify to any theory, however absurd. Again experience has shown that opposite opinions of persons professing to be expert may be obtained to any amount."

In our own state, as well as in many others, there is no fixed standard for medical experts, and it is a very common thing to find

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some one on the witness stand in our courts who should not be there.

In many states, our own included, one may pose as an expert who claims to have a knowledge of the subject upon which he proposes to testify, and he need not be a practicing physician.

It is a well-known fact, and one deplored by every fair-minded and justice-loving doctor, that for some reason the idea is prevalent that expert evidence can be retained for a fee, in precisely the same way and for the same purpose as a lawyer in the case. In fact, we have medical men who for a consideration will and do become the medical advisor in the proceedings requiring medico-legal light, not only that, but after aiding the lawyer to build up his case he assumes the title and place of a true expert, goes on the witness stand and swears to their conjoined theory. For this cause medical expert evidence has become a hiss and a by-word, and true medical gentlemen hang their heads in shame.

An expert witness should have no interest in the outcome of the case in which he testifies, and his opinion should be entirely unprejudiced by surroundings. He should be as unapproachable as the judge upon the bench, or the juror who hears the case.

Questions upon which his opinions are asked should be propounded as clearly as those to the judge in the case, and he should be given the same time to prepare his replies and under practically the same rules, instead of allowing lawyers to go out, as they often do, and hunt until they find some one who will testify to suit their wishes. The selection of experts should, under proper regulations, be left to the court, and interrogatories to him should be in writing and passed under supervision of the judge. Thus can medical expert evidence be elevated to the place to which it belongs.

This ideal can never be attained except by the united efforts of the two professions, legal and medical, demanding proper legislative relief.

Primarily the coroner was an officer of the crown, whose duty it was to investigate cases of violent, sudden, or suspicious death. As early as A. D., 870, we find accounts of its existence, when it was purely a crown office.

In England at a later date, the coroner was either elected by the

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people or appointed by the lord of the manor, and in one place the office descends as an inheritance from father to son.

In our own country, so far as I know, the office is purely an elective one, and no specific qualifications are necessary to selection. In our own state the coroner's jury has been abolished and the coroner sits alone to hear the evidence and determine matters brought legally before him.

In addition to the former duties, in matters of sudden, violent or suspicious death, the coroner has another duty devolving upon him in our state, viz., that of sheriff's duties in case of legal action against that officer or the vacancy of the office of sheriff by death or otherwise, when he becomes the acting sheriff of his county, with all the authority and power of the office. This, however, so rarely occurs that necessary arrangements could be easily made by law for the assuming of these duties by some other person.

Now, while, as we have said, the coroner's principal duty is to investigate cases of death of uncertain origin, his powers therein are simply those of a judicial officer, shorn of all power except that of apprehension.

The coroner is called to take charge of a body. He summons his witnesses, takes evidence that is duly made a matter of record by his clerk, finds that this person has come to his death by reason of violence done by some one unknown to him, files his report and his bill; or, suppose again, he finds that this one came to his death at the hands of some one whom he names. He orders his apprehension, detention, and turns the matter over to the grand jury at its next session. Now, when the grand jury takes the matter up, they, with the states attorney, begin at the beginning and go over the entire ground again and arrive at their own conclusions without any reference to the previous action of the coroner or what his verdict may have been.

His action and his influence does not extend farther than his own office

No court of jurisdiction sufficient to try and pass judgment and sentence upon one charged with a crime, would or does for a moment consider the verdict of a coroner in the making up of his own

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verdict. While our statute books provide for the office, courts have no place for it.

Statements from various parts of the state, lead me to conclude that this office of coroner costs the people of our state nearly or quite $100,000 per year, where the necessary expense would be only a small part of this sum.

This office is not of world-wide use; in many countries it is not known or has been abandoned. In Germany, the duties are done by the police officers, who are themselves crown officers and given necessary powers for all emergencies by the aid of magistrates or judges as we have them. This, in our country, would not be practicable, for we have not the universal police espionage that they have there.

In the State of New York, and I believe in Massachusetts, the judges appoint one or more medical men, styled examiners, whose duties are to investigate these things, make post mortems, hear evidence, and whose duties are about the same as coroner. In this way, it seems to me, the expenses would be but little reduced, and it would matter but little whether we call the officer, a coroner or an examiner.

In my judgment the French nation has come nearer solving this problem than any other. There the prosecuting attorney takes charge of these matters at once, it increases his own labor but little. The expense to the state is very small, and if, in his judgment, no investigation is needed, none is made. The whole matter is wound up in a day or two and it is over. It is made a part of the work of his office, and no separate fee is charge or allowed, and there is no inducement to drag the matter along from day to day. Then again, if his investigation develops the fact that a crime has been committed, he has gained all the preliminary knowledge necessary to the proper future conduct of the case, for he himself has laid the entire foundation for it. Under our law, as it now stands, he first legally comes into the case when it is filed in court, and as it comes before the grand jury, hence, in my judgment, the attitude of the court.

The prosecutor must gather up and familiarize himself with the evidence and the court permits it to be done here because it cannot be done sooner.

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But if the present coroner's law is repealed and it is made his duty to take charge from the onset, this grand jury investigation would not be needed, and he can follow every step of his case from beginning to ending. Thousands of dollars would be saved each year to the taxpayers of the state, and the statute book would rid itself of one of the heirlooms of the feudal ages.

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THE COMMON USE OF GLASSES.

F. C. HEATH, M. D., INDIANAPOLIS.

The wearing of glasses is so much more common than formerly that we are often asked to give an explanation. Frequently parents, bringing their children to us, express their astonishment that so many school children are wearing glasses, a thing almost unheard of when they were young. A recent article on "Superfluous Spectacles," seeks to explain a part of this increase by the unnecessary prescribing of weak lenses, "which have only a mythical value." Are there any good reasons for this increase, or is specialism in this direction running mad, like the wild rage for extirpating ovaries, stretching rectums, removing turbinates and snipping the muscles of the eye?

There is more in this question than appears upon the surface. There are reasons for the increase in the use of glasses, and there is also something to be said as to unnecessary prescribing.

Obviously, the first reason for the more common use of glasses is that we have learned to recognize these troubles and their multifarious effects as we could not in former times. The intelligent and conscientious physician is no longer satisfied with giving anodynes to little or no purpose in protracted or recurring headaches, knowing that their most frequent cause is eyestrain, easily remedied by glasses, correcting refractive errors or lightening the burdens of weak muscles. Neurologists, moreover, have learned that nervousness, dizziness, insomnia, some forms of chorea and possibly graver affections are due to eyestrain—at least that this will act as an exciting cause where there is any predisposition to such troubles. The subject of reflexes has doubtless been overdone, but oculists have certainly erred less than workers in many other lines.

Doubtless many of the symptoms of eyestrain commonly called

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reflex are really part of a general nenrasthenia, produced by the great amount of nervous energy consumed in over-working the intraocular and extraocular muscles, but in some cases, due to other causes. The happy results from the accurate adjustment of glasses in those cases where the eye is either the sole or partial cause of the symptoms are now a part of our everyday experience. Before Donders' time such cases went unrelieved and often from their sufferings or from imperfect vision were not only incapacitated for work, but also tortured by fears that they were going blind. What a boon has the work of Donders' and his followers been to the thousands and tens of thousands who have been thus relieved and benefited.

As an explanation of much of the increase in the use of glasses, then, we must have the facts that we relieve thousands of sufferers who formerly went unrelieved and give useful sight to countless numbers, othewise crippled and handicapped by imperfect vision.

But the question may be asked, is not the more common use of glasses due also in part to an actual increase in the frequency of eye troubles? This is undoubtedly true. Advancing civilization has its disadvantages, among which are overwork of the eyes under unfavorable conditions. With some the desire for wealth, and with others the hustling necessary to make a living in the midst of so much competition, lead to overwork in adults, and the school children suffer from the crowding methods pursued. Special trades like that of the lithographer, requiring continuous attention upon fine work, are particularly injurious. The eyestrain from such causes, with its suffering and its dangers to the eye, producing serious lesions, such as choroiditis, retinitis, glaucoma and cataract, is practically an affection of these bustling times—unknown to former highly successful. The high schools show the worst results from overstrain—the myopia ranging in those of Germany from 20 per cent in the lower to 60 per cent in the higher grades. Of 1,133 school children examined in New York less than 4 per cent were found near-sighted at seven years of age, but nearly 27 per cent at twenty years. Von Hippel claims that the removal of unfavorable conditions as far as possible as a result of these investi-

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gations has reduced myopia in Germany at least 6 per cent. The unfavorable conditions are all things tending to strain or congest the eyes, such as bad air, excessive heat, low desks, requiring pupils to bend over their work, light either so bright as to irritate the eyes or so dim as to require straining to see, or light shining directly in the eyes, and hence causing bending to avoid the glare, small or indistinct print, Greek and German text, too long hours of study with intermissions too short and too infrequent, and finally too much written work. Written examinations should not be too frequent—while of value to promote exactness they are very trying to the eyes. Cohn found out of ten thousand school children in Germany 1.4 per cent of pupils in village schools near-sighted, and 11.4 per cent in city schools, atributing the difference in proportion to the fact that the city schools were darkened by height of surrounding buildings, while the village schools stood by themselves and obtained abundant light from all sides. Possibly differences in the hours, terms and methods were also factors in favor of the village schools. Here, then, is a field where we might lessen the amount of myopia calling for glasses by the same attention to these matters as has been shown in Germany. Enough, certainly, has been said to show that increased use of glasses is due in part to actual increase in eye troubles.

It remains only to consider the question of unnecessary prescribing.

Here we must make a distinction between the oculist and the optician, or any other assuming to prescribe glasses. It is astonishing that anyone will trust a thing of such priceless value as the eyesight to opticians, jewelers, druggists or peddlers, the best of whom know nothing of the needs or diseases of the eye. Yet physicians have often sent patients to these incompetents! What would they think if sick people were sent to the druggist instead of to them? The cases are nearly parallel—an optician sometimes may give a glass that is satisfactory, just as the druggist may do for the sick man, but such work is risky and unscientific. These people who make free examinations so-called are certain to prescribe unnecessary glasses, because they have to sell their goods. The oculist has no such selfish motive, getting the same fee for examination, whether glasses are ordered or not. Besides he stands on the same

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high plane of professional honor, feeling for humanity and devotion to scientific truth with the great majority of the medical profession. He may occasionally err in judgment, attributing too much to the refractive error found; he may fail to recognize that such errors do not call for correction, unless they produce symptoms of discomfort or imperfect vision, but his work is usually conscientious and thorough. The claim has been made that oculists too frequently prescribe weak lenses, "having nothing but a mythical value." Upon this question Dr. Starkey, of Chicago, made inquiry of many leading oculists, most of whom stated that they used them commonly and were convinced of their value. Dr. J. L. Thompson replied: "The evidence of patients is such in hundreds of cases that I am as fully convinced of the remedial power of these lenses as I am that the earth revolves upon its axis." Many confirmatory cases were cited. My own experience is in full accord with this view. Doubtless many refractive errors of moderate degree produce symptoms only when the eye is overtaxed or the system below par. These cases could often do without glasses by resting and building up their general strength, and the writer has had excellent results where this course was pursued. In others the temporary use of glasses proved of advantage. Where patients will not give up work relief cannot be obtained without glasses and in the cases of greater refractive error these are practically an indispensable means of treatment.

Finally, as an offset to the unnecessary use of glasses, in some cases may be mentioned the fact that thousands who do not use them would be better off if they did, receiving the benefits of greater convenience in increase of vision, greater comfort in the relief of eye-strain, greater safety to the eye, preserving it from those impossible and disastrous effects of strain, retinitis, choroiditis, glaucoma and cataract, and enabling little children, handicapped by imperfect vision and unjustly condemned as backward or inattentive to compete successfully with their companions.

Therefore, while we hope eye troubles may be lessened by greater attention to conditions of work and hygiene in the future, we expect that glasses honestly and intelligently adjusted will be worn quite commonly and will be considered not as an annoyance or an evil, but as a great means of relieving sufferers and increasing their usefulness in the world.

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THE DIAGNOSIS AND TREATMENT OF CEREBRAL MENINGEAL HEMORRHAGE.

G. W. M'CASKEY, M. D., FORT WAYNE.

With the rapid, and in some instances revolutionary, changes which have occurred within recent years, new questions are constantly confronting us, and old ones require to be examined in a new light. Among these changes, perhaps, none are more noteworthy than the surgical invasion of the brain. And the circumstance that certain types of intra-cranial hemorrhage can be thus treated in a radically curative manner has given to the neurologist some difficult and insoluble diagnostic problems. It is from the standpoint of the neurologist and the general diagnostician that I shall consider the subject which forms the title of this essay, and which is of both neurological and surgical interest.

The anatomical relations of the cranio-cerebro structures are such that meningeal hemorrhage may occur either between the dura and skull, between the dura and subarachnoid, between the latter and the pia, or beneath the pia. We thus have four possible forms of meningeal hemorrhage: Peri, or extra-dural; sub-dural, subarachnoidean, and sub-pial. The arachnoidea, for the reason that it is little more than a thin, movable diaphragm between the dura and the pia, is of but relatively little importance as a partition between the possible sites of meningeal hemorrhage.

The main questions, then, as it appears to me, and which I will endeavor briefly to review, are:

First, have we, in any individual case, really to deal with intracranial hemorrhage?

Second, is it meningeal?

Third, is it extra or sub-dural?

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And fourth, what shall the treatment be?

Of course it must be frankly conceded at the outset that in a considerable proportion of cases we are not yet in position to give a satisfactory answer to all, or even to any of these questions. There is probably no class of cases in which the diagnostician is put, so to speak, more fully on his metal; and in which the faculty of close and accurate observation, and power of logical analysis are more imperatively demanded. But with all this he must often arrive at lame and impotent conclusions, because of the present status of physiological knowledge, and the frequent absence or faultings of clinical histories.

The first question, as to the existence or non-existence, of intracranial hemorrhage, I shall simply formulate. The problems of diagnosis are utterly different, according as we have to deal with traumatic or spontaneous cases. In the former case we have to differentiate from contusion, concussion, depressed fracture, and abscess; in the latter principally from embolism and thrombosis in the rapid cures, with the addition of abscess and neoplastic formations in the slower. Of course some of the conditions mentioned, co-existing with the hemorrhage, may render diagnosis of the latter equally impossible and futile.

Passing at once to the next question we will enquire whether intra-cranial hemorrhage, having been assumed, we can decide that it is meningeal or intra-cerebral. In many cases we can not. But we are, fortunately, not without significant data, both as regards the symptomology and clinical history, which will aid us in the solution of this practically all important question. In the first place it may be remarked in a general way that if it is traumatic it is probably meningeal, or both; and if spontaneous, intracerebral. These propositions must be received, however, with considerable mental reservation, inasmuch as there are numerous exceptions. In traumatic cases the already classical lucid interval between injury and pressure symptoms, whether the duration be of minutes, hours or days, is almost conclusive proof of meningeal hemorrhage. This interval would probably always be present, however brief, were it not for the submerged consciousness of complicating conditions, which too frequently passes unbroken into that of hemorrhagic pressure. At-

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tention has been called to the subsequent rise of general body temperature in cases of hemorrhages, as a distinguishing point between this and concussion. If Hutchinson's observations, that the brain in cases of concussion is pale and bloodless be correct, a depressed local temperature would be almost a necessary carollary. The study of the surface temperature of the skull there ought to aid in the diagnosis, a rise indicating hemorrhage or contusion. I cannot refrain from remarking in this connection, that I am firmly convinced, after a somewhat extended series of observations of the surface temperature of the skull in cases of brain tumor, meningeal hemorrhage, and other cerebral lesions, that this aid to diagnosis is entitled to fuller recognition than it is now receiving. The occurrence of spasmodic movements upon one side, preceding unconsciousness, points to hemorrhage beneath the arachmoida, and possibly beneath the pia. On the other hand, complete or nearly complete hemiplegia, with slight or transitory coma, is in favor of intra-cerebral hemorrhage; while the deepest comas, in which hemiplegia is present, may be marked to casual observation, are formed in hemorrhages of the meningeal or ventricular type. Inequality of the pupils with the dilation on side of lesion, is in favor of meningeal hemorrhage. So is pain, not otherwise explained.

A few cases have been reported in which slow subarachnoidean hemorrhage, spreading out over the surface of the hemisphere, produced rhythmical spasmodic movements of the opposite limbs. This by itself would not, of course, establish the diagnosis, but if followed later by hemiplegia and coma no doubt should remain that the case was one of meningeal hemorrhage. In line with this observation it may be said that in any case of intra-cranial hemorrhage, in which the symptoms begin very gradually and progressively advance with some regularity, and after hours or days reach the stage of complete hemiplegia and coma, the case is almost certainly one of meningeal hemorrhage, whether traumatic or spontaneous.

It will thus be seen that we are in possession of data which enable us in many cases in which the clinical history is available to distinguish between meningeal and intra-cerebral hemorrhage with as much certainty as can be attained in the case of any other inaccessible organ.

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We will now pass to the third question: Can we distinguish between the different forms of meningeal hemorrhage?

As already indicated the distinction of chief importance is between those which are extra-dural and those which are between the dura and the cortex, ignoring the particular forms in the latter, although some recorded cases, and especially one by Starr, indicate the occasional clinical importance of the sub-pial form; its anatomical relations, like those of the extra-dural variety, limiting its extension, and causing the focal to predominate over the general pressure symptoms.

The positive diagnosis between extra and sub-dural hemorrhages is in the majority of cases difficult, and in many impossible. The very slow development of symptoms following trauma, with paralysis and coma later, points very strongly to extra-dural hemorrhage. Jacobson, basing his conclusions on the study of about eighty cases, asserts that dilatation of the pupil on the side of the lesion is diagnostic of extra-dural hemorrhage. This phenomenon, which, as Jackson justly observes, should be designated Hutchinson's pupil, is produced by the extension of clot toward the base, causing pressure of the third nerve. It seems doubtful, however, if much importance can be attached to it as indicating upon which side of the dural the clot lies. This is fully illustrated by a recent case of which I made a neurological study for diagnostic purposes at the request of Dr. W. H. Meyers, who subsequently operated upon this patient. In this case a post-operative sub-dural clot produced marked dilatation of the pupil on the side of the lesion. In another case which I saw in consultation with Dr. A. B. Darby, of Waterloo, the pupils were perfectly symetrical and rather samll. Post-mortem examination showed a large sub-dural clot, just behind the arm center, the operative relief of which I had advised, and which it was demonstrated could easily have been accomplished. After a careful study of numerous recorded cases, and in the light of my own observation, I feel justified in asserting that the only thing which can be safely predicated upon Hutchinson's pupil is that the pressure is affecting the base of the brain upon the corresponding side. It is, however, of the greatest value in this connection; and when ocurring in the historical development of the clinical picture of a case of

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meningeal hemorrhage, it furnishes an external sign of internal events that is at once graphic and important.

In concluding this necessarily brief discussion of diagnosis one fact should be kept constantly in mind. It is, that the hemorrhage is almost certainly not extra-dural, unless there is well-marked hemiplegia, and further, as it seems to me, unless the hemiplegia or other focal symptoms predominate over the symptoms of general pressure.

It would aid immensely in the final solution of these questions if general practitioners, who almost invariably see these cases first, would make an accurate record of the development of symptoms, and especially those relating to the pupils, to motions and to speech.

We are now ready to rapidly consider the line of treatment to be followed in such cases. This should be, in a word, if I may be permitted to use a somewhat antithetical phrase, a conservatively aggressive combination of expectant, medical, and surgical measures, so modified as to meet the exigencies of each particular case. Let us particularize a little.

As soon as possible after the occurrence of a meningeal hemorrhage, whether traumatic or spontaneous, the patient should be placed in a quiet, well-ventilated and softly-lighted or darkened room. The favorable influence of gravity should be invoked by elevating the head of the bed, avoiding such an inclination as would place the patient in a constrained position, thus producing nervous irritability, with increased heart action, and harm rather than benefit. The head should be very moderately raised on a small somewhat firm pillow, avoiding too great flexure of the neck, with its obstruction to venous returns. The scalp should be smoothly shaven and disinfected in every case. This is imperatively demanded, alike for the purposes of accurate examinations, subsequent clinical study, surface applications, and, when required, surgical interference. There should be no compromise on this question in any case. The brain is sufficiently inaccessible, and its symptomology sufficiently ill defined without further obscurations by a cushion of hair.

Stimulants and heart tonics should not be given in any case of suspected meningeal hemorrhage, unless it is in imminent danger. Their indiscriminate use has often converted what might have been

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a trifling extravasation, into one of fatal issue. The period of partial collapse is nature's opportunity of sealing up the rent, by a barrier which may be firm enough to resist the *vis a tergo* of a feeble heart, but which would give way readily before the throbbing currents of a heart goaded into violent action by alcohol, digitalis or ammonia. On the contrary the force of the returning circulation should be carefully watched, and, when necessary, controlled by cardiac depresants. For the same reason the volume of the circulation should not be swelled by free libations of fluid.

The external application of cold is of the utmost importance. Surgeons are in the habit of controlling past operative meningeal, or even cortical hemorrhage, by the application of the ice-bag or freezing mixture. These dressings are, of course, very poor conductors of heat, and it is perfectly obvious that the sub-cranial heat can be more rapidly abstracted through the better conducting media of shaven scalp and skull. The powerful hemostatic action of cold, together with its sedative action upon the physiological process of the brain renders it by far the most important non-surgical measure at our command for the purposes indicated.

These means having failed to arrest the hemorrhage the services of the surgeon should be requested in every case in which a localizing diagnosis can be made, and the effusion is in an accessible location. Even when the localizing diagnosis is involved in some doubt, as it often will be, an exploratory operation should still be advised, if the gravity of the symptoms demand it. The neurologist may be unable to decide between two locations. The most probable one should be first operated, and a second craniectomy unhesitatingly made at the alternative location. Such a case occurred in the practice of Dr. F. X. Dercum, of Philadelphia. The point at which he first directed the surgeon to operate was the wrong one. He advised a second, but the surgeon declined to make it, and post mortem examination showed a meningeal clot at the second point indicated, and the patient would probably have been saved, had the surgeon followed the advice of the neurologist. It probably requires considerable courage to do this, in view of the uncertainties which frequently overhang the diagnosis of the neurologist in brain lesions, but the simple fact is that there does not seem to be, nor in the nature

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of things can there be, any better light to follow. Both neurologists and surgeons are learning the lesson that there is no special hazzard in the removal of a few square inches of the cranial vault, if done with proper precautions. There should be little hestitation, therefore, in giving to doubtful cases, properly selected, of course, the benefit of a procedure which will be diagnostic at least, and which may be radically curative.

While both the neurologist and the surgeon should be progressive enough and bold enough to see their duty and perform it, yet such measures must not be either by the urgency of the symptoms or the future of the patient. When circumstances permit of continual watchfulness and prompt actions, at any time the operations should not in many cases be performed at once, even though it appears probable that it will finally be required. Time should be given for the formation of a clot, which will favor permanent closure of the vessel. Compression of the brain sufficient to produce mild focal symptoms will be tolerated several days without permanent damage. This gives ample time for watching developments and permitting spontaneous arrest. It must be borne in mind, however, that patients have gone to bed after very slight head injuries, with doubtful symptoms of meningeal hemorrhage, gone quietly to sleep and awakened their companions in the night by the stertorous breathing of a coma, which heralded impending dissolution. The watchfulness should therefore be unintermitting.

If the hemorrhage ceases and the symptoms become retrogressive, but persist, should the skull still be opened?

This must depend altogether upon the symptoms in each case. A reasonable time may be allowed for the complete disappearance of symptoms. If this does not occur, and especially if marked focal symptoms remain, and, although all danger to life has apparently passed away, the operation should still be performed in order to save the patient from the result of chronic compression, with the symptoms of an irritative lesion, or possibly cerebral agenesis, if the patient is sufficiently young. Such a result I recently saw in a case referred to me by Dr. George C. Stemen. The history indicated a meningeal hemorhage in childhood, and now, at the age of eighteen or twenty, the patient is a confirmed epileptic, with the usual psychical ten-

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dencies. There are some things in this world that are worse than death, and this is one of them.

In conclusion, I wish to remark that while no one can be more painfully conscious than myself of the difficulties that are inherent in the diagnosis and treatment of meningeal hemorrhage, yet I am fully convinced that there will be fewer fatal issues, fewer chronic hemiplegias, epiliptics, and dements, whenever we act fully up to this light which we now possess.

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MODERN VIEWS OF THE CAUSES OF MATRIMONIAL STERILITY.

HUCO O. PANTZER, M. D., INDIANAPOLIS.

The importance of matrimonial fertility to individual and national welfare even if there were no other ground, demands the occasional revival of this subject. The recent advances in pathology have no where occasioned greater upheavel and more radical change in opinion than in the views of matrimonial sterility. The writer purposes to take a ramble over the field, past and present, to review interesting points here and there, rather than attempt a methodical and exhaustive discourse, for which neither time nor occasion are favorable.

The chapters on sexual life in works on demography are among the most interesting and instructive in the history of the human race. Their perusal is essential to the full understanding of the bearing that sterility has upon the individual, family and national economy. Those interested will find a most thorough and comprehensive presentation of the subject given in a work by Dr. H. Ploss, entitled "Das Weib in der Natur und Voelker kunde" (Women in Natural History and Ethnography), which has recently appeared in English translation.

There is a great consensus of opinion on sterility, as held at different times by all races. Quite commonly the female is considered culpable, and only rarely and in obvious incompetency alone is the male regarded at fault. The sterile woman is a despised and unfortunate creature. She is submitted to all sorts of indignities. With some races the barren female may be returned to her parents and the purchase price remanded. It may be that she is allowed to supply a sister to her husband for procuring offspring. Re-

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ligious superstition has regarded barrenness in wedlock as a punishment visited upon the female by an irate Deity, or has even declared the unfortunate woman possessed of the devil, which entailed all sorts of mistreatment and punishment.

In more enlightened times and races even up to this date, the woman in barren wedlock sensibly bears the brunt of the grievous restriction. Not infrequently domestic infelicity, as a direct or indirect consequence, follows in the train.

Sterility of the human race compared with other animals, is of the greatest frequency. This is largely because in woman the apparatus is complicated, "if not inadequate for the purpose," says Henle. Upon the happy fimbrial seizure of the ovary during ovulation depends the successful carriage of the ovum toward where it may meet with the fecundating spermatozoid and find a suitable brooding place. The fimbrial seizure of the ovary is easily disturbed owing to disease or simple displacement; the ovum is then lost in the peritoneal cavity. Thomas, in an article on this subject, has recently emphasized the importance of a perfect fimbrial function and expressed the conviction that the device is easily disturbed by displacement of the parts, or even slight imflammatory disease. This opinion must be regarded as irrefutable by every thoughtful observer.

Sexual congress in the lower animals is restricted to the most opportune times, namely, at rut, when ovulation and menstruation coincide and the alkalinity of the vagina makes conception almost an invariable result. The simple anatomy also favors conception. The ovary is entirely surrounded by the abdominal end of the tube. Copulation in the human race is restricted to the intermenstrual period. This may have in time so perverted the primal order that as a consequence the coincidence of ovulation and menstruation is not any more the invariable rule. Lately this matter has again been subjected to scientific revision. Leopold and Mironoff (1894) studied the appearances of forty-two pairs of ovaries, taken from women on whom the operation of their removal had been performed for various other diseases. Only healthy ovaries were included in the examination, and only those of women who were able to make definite statements about the exact time and duration of their last

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period. The ovaries were examined micro- and macroscopically. It was found that in the forty-two cases ovulation and menstruation coincided thirty times and that menstruation was unattended by ovulation twelve times. In the latter instances the ovaries contained no ruptural follicles, though follicles ripe for bursting were found. Upon reflection it would seem that had the catamenial congestion in the latter cases been reinforced by sexual orgasm, that the concomitant increase of intra-abdominal pressure (such as occurs during cohabitation which, in lower animals, takes place during rut), the follicles in these ovaries would also have bursted. It may be that the physical disturbance preceding the operation may have suppressed ovulation and thus the relative frequency of simultaneous ovulation and menstruation in this group of cases was lessened. Nothwithstanding facts and arguments to the contrary, adduced to show the disassociation of the functions, the prevalence of opinion still holds to a temporal and causal connection between ovulation and the catamenial function.

Henson's observations, based on 248 cases, show that conception occurs in greatest frequency immediately following menstruation; that conception during the flow is a rare event. Many clinical observations and theoretical considerations favor the view that the functions of ovulation precedes the primary occurrence of menstruation some time, and may continue for some years after menstruation has ceased. Cases have been reported where conception has occurred before menstruation ever appeared, and also after menstruation had ceased for some time. According to Cook (1894) the girls of the Esquimaux marry and conceive when fourteen years and younger, whereas their menstruation first appears at the age of nineteen or twenty years. Bossi (1891), on a basis of twenty-seven cases, in which the date of conception could be definitely fixed, concludes that the most favorable times for conception are the days immediately following the menstruation. A premenstrual coitus may impregnate. Alive spermatozoids have been found within the vaginal vault seventeen days after coitus. Kroenig (1895) reported a conception which occurred on the fourth day after parturition, showing that ovulation can occur at the end of a normal gestation.

It has been suggested that a certain mutual adaptation of the pair

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seems necessary before conception occurs. This inference is made upon the observation that commonly conception occurs for the first time only after months of cohabitation. It appeals to reason that the congestion incident to sexual hyperactivity, accompanying the early months of married life, may disturb functional regularity and interfere with the more frequent occurrence of early conception. It is possible that conception often occurs early, but that gestation is interrupted by the subsequent great sexual activity.

Very early and very late marriages are prone to be sterile. Woman's best years are between the ages of twenty and twenty-five years. Pfannkuch proves statistically that in marriages entered into before the twentieth year fecundation is retarded, comparatively, six months. Fright, fear and other preoccupied mental conditions, are impediments to conception. They probably are allied in their local effect to frigidity, dispareunia, adiposity, general debility, alcoholism, and similar conditions of known untoward influence. These influences probably act by inducing defective local circulation and consequently modifying ovulation and menstruation. Tuberculosis, as a condition entailing sterility, since J. Whitridge Williams (1893) has called our attention to the frequency of primary tuberculosis of the tubes, figures much more frequently in our present estimate of the causes of sterility.

Syphilis devitalizes the spermatozoids and unfits the uterus for gestation, and it may attack fetal life directly. Diseases of children, especially the exanthemata, are said to give rise to destructive changes of the sexual organs, entailing sterility ultimately. Evidence on this point naturally is meagre, owing to the rare opportunity given for autopsies upon recent cases. However, the few cases found and the respective clinical evidence, are quite conclusive. It is likely the relative frequency of such cases has been overrated. Infectious and debilitating diseases during the period of puberty of the female interfere often for months with menstruation, and undoubtedly exert a retarding effect on the growth and maturation of the genital organs. The ordinary expectation is that nature, without special care, can and does make up again. This view is manifestly faulty and disastrous as clinical observation reveals. Special hygienic measures and freedom from burdening tasks and kindred measures should early be invoked to make amends.

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Gottschalk has called attention to this class and describes instances of uterine atrophy in sterile young women, four of whom had acute typhoid fever at the time of the first menstruation, and in other cases scarlatinal oophoritis had preceded. Gottschalk attaches great importance to the early and full treatment of amenorrhea.

Jolts sustained in early life may give rise to displacements and subsequent conditions which materially interfere later with the correct development and functions of the genital organs. At the time of the injury, these organs being immature and inactive, the dislocation may cause no immediate inconvenience. As a consequence little natural or artificial effort toward correcting such displacement is made, and it persists and becomes confirmed. This class of cases, in the writer's opinion, is large. It figures more frequently in causing sterility than is accepted. Of all kinds of displacements, this kind is the most disastrous to the health and fertility of the individual, and the treatment encounters great difficulties. It is prognostically and therapeutically interesting to discriminate between this class of displacements, and those occurring after maturity. The writer has met with thirteen outspoken cases of lateral displacement belonging to this category, within the last few years. Seven of them occurred in married women who had been sterile for a period varying from a period of one and a half to seven years.

All these cases had the initial feature of having sustained a severe fall in early life. This was attended by local pain of short duration, commonly not lasting longer than a week or two. Menstruation appeared variously. In some cases it was retarded, and attended with much local and general disturbances. Growing dysmenorrhea was a constant feature. Constipation was an early symptom of all cases. Owing to the prolapse of the ovary on the side of the lateral displacement, this organ is generally more or less involved. As a rule it was found enlarged, painful to the touch and, like the womb, fixed and adherent in its faulty position. Defecation, especially in those cases where the displacement was toward the left, was attended with much pain and nervous symptoms. One patient had severe fainting spells at different times while in the act of defecating. Neurasthenia was a more or less severe feature in these cases. At

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times the incarcerated ovary would swell to great size; this was seemingly in etiological relation to the irritation of excessive general exercise, costive movements, or sexual intercourse which had preceded. This swelling commonly would recede after a short period of rest. The treatment consisted principally in massage, tending to free the organs from their adhesions and gain for them natural position and mobility. Commonly the non-inflammatory origin and nature of these cases admit early of the forcible release of these adhesions. Subsequent stretching and kneading, and careful watch of these cases is further required to maintain success. Obviously discrimination and skill are called for to avoid inflammatory complications. All untoward influences must be eliminated. Attention to hygiene, gymnastic, hot douching, wet compresses over the pelvis and purgatives in the early stages, among other measures should be applied.

The results in the cases above mentioned have been very gratifying. All the patients improved in their general health. The catamenial disturbances in all cases were more or less entirely and permanently cured. One case living at a distance could not be treated regularly, and a vaginal fixation was found necessary to insure against relapse. Four of the seven married women have since borne offspring, one of them twins. Two seem rather hopeless for offspring, though for them and the seventh case sufficient time has not yet passed. One of the single women has married since the treatment. Up to the time of her treatment, at the age of twenty, she was an anemic, nervous and ailing creature. She had exhausted the list of cathartics in remedying the attending constipation. The genitalia were undeveloped, and the pubes had scarcely any hair. Within one year she had developed visibly into womanhood. Her marriage followed shortly afterward and now she has a male child. Gestation had not the full ordinary effect in giving matronly proportions to her, and lactation could be continued a few weeks only. Altogether, the case is probably the most interesting in the series, as demonstrating first the dire results possible from this form of displacement, and secondly the efficacy of the therapeutic recourse.

Until recent times comparatively little was known of the pathological conditions interfering with fertility. The last quarter of a

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century has matured our understanding considerably. Excluding the comparatively few cases of congenital sexual malformations which absolutely preclude fecundation, sterility must now be regarded as essentially an acquired condition, and in a measure remediable. This view indicates a complete reversion of the views which until recently were held.

Noeggerath was the first to point out the destructive role that gonorrheal disease plays in the production of sterility. It will be remembered that in 1872 Noeggerath published his opinion that gonorrhea in the male was practically incurable; that it continued in a latent form; that the wives of husbands who have once had gonorrhea were certain to become infected, and that primary or secondary sterility in the female was sure to follow. In consideration of the wide-spread prevalence of gonorrhea these declarations received much attention, and at the time of their annunciation were much opposed. They have served the usual purpose of giving the most powerful incentive to the study of gonorrheal disease and the causes of matrimonial sterility. At this date it must be said that advanced science virtually sustains Noeggerath's opinion. Gonorrhea is proven to be the most frequent and destructive inflammatory disease affecting both male and female fertility. This is owing, firstly, to the intricate anatomical structure and physiological function of the generative organs in man and woman and secondly, to the character of the histological changes produced by the gonococcus. When once the microbe has infected the genitals, it has found such secure entrenchment as to be almost practically unconquerable. Variations in virulence of the gonococcus, different susceptibility of different individuals to this germ, and differences in the extent of the invasion, as also the relative absence or presence of complications, mark greatly different courses. No doubt nowadays many cases of gonorrhea are aborted and other cases are cured. Yet Noeggerath's teaching is true to the extent that it emphasizes the destructive tendency of this disease, and that gonorrhea is the most frequent cause of male and female sterility.

For a while pathological research seemed to establish the fact that the gonococcus *per se* was little destructive to tissue, but that it prepared the soil for a far more destructive pathogenic invasion

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following in its wake. It was long held that the gonococcus gave rise only to adhesive inflammation and that it could not exulcerate tissue, nor penetrate deeply into tissue. Where such changes attended a gonorrheal inflammation, they were thought to be owing to some other microbe present; a so-called "mixed infection" was accepted. It is now ascertained that the gonococcus singly may give rise to all sorts of inflammatory changes; that it is pus-producing; that it gives rise to connective tissue proliferation of the most destructive kind; that it may cause both adhesive and suppurative peritonitis. The gonococcus may penetrate the full thickness of the uterine wall, giving rise to the incurable form of metritis which is the crux of the gynecologist, and which until lately was unexplained and theoretically ascribed to other infectious agents. It is the most frequent cause of child-bed fever, though commonly not the most fatal form of this affection. The insults to the vagina and uterus incident to child-bearing afford entrance points to the deeper structures. A chronic or sub-acute vaginal or cervical gonorrheal inflammation may and indeed does often exist without being suspected. Under the favoring conditions and influences of the puerperal state, the pathogenic gonococcus is now transmitted to the submucous tissues, the broad ligament and peritoneum causing quite often a veritable conflagration. Chronic pelvic disease often calling for surgical measures for its relief, and sterility follow.

But the noxiousness of the gonococcus to fertility is not confined to the female. It has been proven that the gonorrhal virus is devitalizing to spermatozoids that come in contact with it. They lose their power of motion and soon die.

Researches into the causes of the latent form of gonorrhea in man have disclosed that in cases apparently cured vital gonococci still reside within the seminal vesicles, epididymis and other deeper structures. This may be at the time unattended by urethral discharge. The seminal fluids of such individuals either contain no spermatozoids, or they are impaired vitally and may even be defunct.

Thus man is frequently the cause of sterility. Graefe, of Halle, A. S. (1895), accepts that in 50 per cent. of cases matrimonial sterility is owing to azoospermia. L. Seeligmann (Muenchen, 1893,) computes that the barren marriages under his observation

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are owing to the male in 75 per cent. of the cases. B. Vedeler (Christiania, 1895,) reports the results of his study of 310 women married one year or longer without conceiving. The husband was examined in fifty cases. He concludes that in 70 per cent. of the cases the husband is the cause of the sterility, owing directly to azoospermia, impotence, etc., or indirectly to his infection of the wife with gonorrhea. In woman *per se*, sterility is present in 30 per cent. of the cases, mainly owing to neoplasms or inflammatory atrophy of the uterus.

In determining the capability of the male it is no longer sufficient to be assured of his conjugal potency. It becomes necessary to examine his discharges for living spermatozoa. The destructiveness and the tendency of gonorrheal inflammation to extend urge that the treatment of gonorrhea, in its early stages, be vigorously undertaken. In very recent times a few European states, in true recognition of the importance of the matter, provided for the gratis treatment of all individuals afflicted with gonorrhea. This, I believe, is certain to become a fixed policy with all nations and communities in the future.

Though treatment is not specially within the scope of this paper, two remedies deserve brief mentioning here. The one remedy is Fuller's method of stripping the seminal vesiculae by massage movement through the rectum. The seminal vesicules have been shown to be the permanent seat of the gonococci in the cases that presented the heretofore incurable type of this disease. From here the urethra is repeatedly invaded; here the spermatozoa are devitalized; and from this region the infectious material is transported to the sexual mate.

The second remedy deserving special mention is ichthyol. It is as much a specific as nitrate of silver, and while the latter remedy is applicable only to surface lesions, the ichthyol by virtue of its penetrating effect applies also to the more deep-seated and chronic forms of the disease. It is the remedy par excellence in chronic pelvic inflammations of this kind. Applied in vaginal tampon and by inunction over the inguinal region, its anodyne, antiseptic, astringent and absorbefacient effects, and withal its penetrating property, make it a most desirable remedy. Of all remedies known

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to the author it is the most potent and frequently successful. In the hands of the author this remedy used in conjunction with other conservative means has saved many a woman a mutilating operation, in cases, which viewed by our former resources, were hopeless without the desperate and mutilating surgical recourse.

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HUMAN PHYSIOLOGY IN ITS RELATION TO BIOLOGY.*

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Within the last fifty years the conception of natural sciences has changed from a philosophical to a materialistic and fiually to a more refined mechanical demonstration. The latter begins also to give way to a more profound view of creation. All theories concentrate at the question of life. Modern science has denied everything beyond perception; at least it has regarded it as not pertaining to its realm. It is my intention to prove that there is vitality, and that vitality rightfully belongs to the field of exact investigations. This paper is not metaphysical; it draws only the border-line of exact science toward metaphysics.

In fact, human physiology should be a branch of general physiology, but the distinction that is always made between the physiology of man and biology proves clearly that both terms do really not cover each other.

I will try to show what human physiology, as it is taught at pres-ent, has a large gap, and even more than this, it cuts off an essential part by discarding the principle of life.

Indeed, we canot speak of life as a force in the ordinary sense, nor as a constraint, but what we find common to a series of individuals in their forms, and what we term "species," we adjudge also to their vital actions in building up and maintaing the forms. Grand is the progress human physiology has made, and so stupendous is its achievement that no one ventured for decades to blame it for its shortcomings in this direction.

Really the mechanical conception of nature did not enhance our

* Read before The Indiana State Medical Society.

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knowledge as to the general causes of disease; it discarded such questions. There is no chapter in the science of medicine without wants. Such questions as periodicity of the menses and duration of pregnancy are referred to general laws; such terms as "temperament" and "constitution," although in daily use by medical practitioners, have not been defined by modern science, and the attempt to pronounce them equivalent to " diathesis " has been proved to be a complete failure.

Chapters on circulation, respiration, digestion and perception fill the volumes of our text-books on physiology, and an immense number of experimental observations are deposited there. The physical part of of physiology has enhanced our knowledge within the last ten decades. But the question of autonomy of the heart and respiratory muscles, of secretions of glands and functions of brain cells, which cause circulation, respiration, digestion and perception, have been evasively treated. Our physiological investigations are all either physical or chemical, and even experiments on the living and vivisections consider the normal or altered actions and products of organs, rather than the processes initiating and leading to production; not that chemical change, for instance, in muscles, which precedes transformation into mechanical force. We may also assume that chemical change during the differentiation and development of muscular fibres in the embryo be different from that in developed muscles, but this difference has not yet been considered. As a result of differentiation into tissues and organs all irritations from without act more favorably on the organism; food is carefully selected and prepared, the organs of senses receive specific impressions with greater minuteness, skin, muscles and skeleton ward off offenses and are better fitted for the battle of life. Life gets such manifold relations that we have a physical, chemical, anatomical, embryological, botanical, zoological, mathematical and even logical method in pursuing them. True to the principle, that the method we adopt depends on the problem we try to solve, we reject physical and chemical methods in questions of vitality. This must be investigated biologically.

If we notice the duck on the water and the carp in the water, taking in the same air, water and food, and producing, notwithstanding the sameness of the whole surrounding, different flesh,

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various organs of motion and breathing and unequal coats, we must necessarily ask, what is the cause of these different results?

Oak and fir take carbon from the same air, and from the same soil water and mineral salts, and nitrogen that is left there, perhaps, by a co-operating microbe; but oak still remains oak, and fir remains fir, and their seed will produce the same as the parent tree.

Allow me now to present to you a perhaps crude comparison. The joiner at his bench gets hump-backed after years, the tailor's and the cobbler's gait and gestures are recognized; their special work has produced this. Specific activity, within bird and fish, oak and fir, develops a special anatomy. But the impulses of animals and plants are inherent and lasting, and endowed already in the germ cell.

Life, indeed, is a chemical change; a preparing and receiving of the potential energy called food and contact with active energy, impressions of the senses and so on, with the result of a widening metabolism and a final kratabolic excretion. But this chemical change is controlled by designing species, or to use the term of the law of conservation of energy only such forms of energy and so much of each are disengaged within the living cell as are in accord with the design of species.

Within the living cell we observe something changeable, that is energy changing its condition from rest or latency, or from one form to another. Disengagement of energy means a change of its condition, and this change from one to another gives us the conception of cause and result. Therefore, we say, all physical phenomena present a causative relation.

But there is also something unchangeable within every organism, something controlling all processes of nourishing and shaping cells and tissues; it can not work or mould, because such an activity would involve a changing. We cannot comprehend it except by comparison. The unchangeable has not causative relation. All we know of it is, that changing energy is led under its influence differently and in designs transmitted by procreation. These controlled uses of the living are biological phenomena; but all speculations beyond recognition of this control of physical phenomena must be rigidly excluded from exact science.

Systematic botany and zoology have given us the term species

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Indeed, since bacteriology, which took its issue also from the workshop of Lehmann and Muller, ushered in various antitoxin treatments, it became evident that Alma Mater was a neglectful stepmother to the dearest of her children.

Without referring to authorities we have plenty of facts and logics on our side to be justified in defining vitality as species in action.

But it has become my duty now to demonstrate the vital conception of nature we advocate.

If we take carefully some deposits from the soil of a swamp we may observe sometimes on our slide little masses stretching to and from and devouring and giving away particles. A close investigation reveals, indeed, feeding, digesting, growing little masses, endowed with all vital functions of higher differentiated organisms. The cell is the simplest living unit, consisting of a nucleus and protoplasm, ordinarily within a membrane. We know many one-celled organisms, sometimes of a considerable size; by division and separation new cells may be formed, but enclosed by a common, slimy substance; a repetition of such a community may form layers of an endoderm and exoderm, or layers transform into tissues and organs; so that we may speak of animal persons, and even these may form a still higher community, viz, an animal state, as ants and bees.

This property of cell-communities developing in several degrees and various forms is termed differentiation.

Cells constituting a complicated organism are still living units although they have lost their power of independence; their individuality is merely ideal.

The laws of differentiation have the tendency to bring the substance of the body into contact with the outer world under most favorable conditions. We observe as the result of differentiation a diminshed variation of species, a more difficult yielding to influences from without, but increasing temporary disorders within tissues and organs. We did not find so far a variation of man, but frequent and manifold diseases of organs exposed to unfavorable influences. The human organism has a strong central power which may sacrifice much in parts in maintaining the whole.

In regard to the laws ruling phenomena in the human body we

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can say what the mechanical school already teaches, that all processes of digestion, respiration, perception, circulation, secretion and motion are subject to the law of conservation of energy exclusively. But changes we comprehend under the names of assimilation, proliferation and production are not mere physical disengagements of energy. We can not speak of combustion in the living body; if chemical change within would be ordinary burning a more intense heat would be produced as we readily observe. Chemical change is controlled by species and led partly into other forms of energy than heat. We know also that muscles and nerves waste more substance than other tissues because a transformation of energy into mechanical or respectively into electric form as it is so preeminently noticed in these tissues, means a loss of the corresponding substance. Any transformation of energy can take place only once on the same matter. Fuel heating the boiler must be renewed if the same chemical change and heating should be continued. But we do not know the changes leading to such transformations; we must also concede that we have no positive proof of the electric nature of nerve impulses; we only say, they are nothing else.

From a general point of view we may call food and air potential energy, entering either directly or after much preparing circulation, but taking part with life not sooner than from capillaries toward abutting tissues. Disengaged energies, as light, mechanic force in hearing and touching, chemical change in smelling and tasting, heat and electricity in transformation are received either by apparatus of senses, which with all probability are metaplastic structures without vital function or by nerve ends distributed over the whole body. The irritation from without enters also to the depth of the body to participate with vital changes.

Blood corpuscles and nerves may rightfully be called freight and mail agents reaching all stations, but not taking part with family life.

Under the light of such views it becomes evident that all physical phenomena within the organism must be strictly separated from vital functions, and also that mechanical and chemical physiology can not be judges in biological questions. Such questions pertaining to life are omitted.

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Concluding, I have to excuse myself for having assumed a critical standpoint in such an important matter. But medical practice forces me daily to refer to vitality whenever I investigate as to cause, course and outcome of a disease, or when I have to state the probable duration of life of an applicant for life insurance. On the other side the thought was so near to pronounce species we observe in the forms, as active also in building up the forms.

Certainly in diagnosing a disease we have to resort to a most careful physical examination and only in questions of cause, course and outcome of disease we must assume the higher standpoint of vitality.

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SOME SANITARY QUESTIONS CONCERNING TURBERCULOSIS.

FRANK B. WYNN, A. M., M. D., INDIANAPOLIS.

Tuberculosis has long held sway as the most terrible scourge of the human race; not as cholera or yellow fever, making a sudden and terrifying onslaught upon a city to-day and leaving it depopulated to-morrow, but slowly and surely at all times and among all people accomplishing its fearful work. Familiarity with this disease has robbed it of much of its terror. The laity do not appreciate the frightful extent of its ravages. The figures of the census of 1890 startle the average mind when we read that 125,000 of our citizens die annually of tubercular disease.

When Robert Koch discovered the true pathology of tuberculosis, as so well set forth by my esteemed colleague, the medical world took new hope, both for the cure and prevention of this fearful malady.

Accepting this bacillus of Koch as the true cause of the disease, let us inquire what are some of the common and preventable sources of infection.

It is now admitted that bovine and human tuberculosis are identical, and transmissible from man to beast and vice versa. Gerlach was first to show that bovine tuberculosis is not infrequently communicated to man. It is the most destructive and widely spread disease among cattle.

That tuberculosis follows in the wake of civilization is no less true of lower animals than of man. Wild beasts do not suffer from the disease till sheltered in zoological gardens. In Europe about twelve per cent. of cattle are said to have tuberculosis. Some herds have been found in this country in which seventy-five per cent. were affected. Examinations for tuberculosis in Massachusetts, Rhode

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Island, and other states of New England, show over seventy per cent. affected. It is more frequent in milk than beef breeds, and twice as common in cows as in steers. Frequency increases with advancing age.

The practical point to determine is, are the milk and meat of tuberculous animals infectious? In the cow one of the most frequent lesions is that of chronic mammary tuberculosis, characterized by diffuse, hard tunefaction of the mammae and more or less induration of the udders. There is marked increase of fibrous connective tissue elements. Nodes of varying size develop, which often undergo ceaseous or calcareous transformation and ulceration. The mammae present a knotty appearance and the degenerated nodules are rich in bacillary accumulations. The milk of a cow with tuberculous udders is dangerous and should not be used. In such milk the microscope reveals tubercle bacilli and inoculation experiments with it upon guinea pigs and rabbits, communicate the disease. Such is the conclusion of the Royal Commission, appointed by parliament, which has spent five years carefully investigating this subject and included no less a distinguished pathologist than Sims Woodhead.

In the August inspection of dairy herds in and about this city, 165 dairies were visited and 2,751 cows inspected. Seventy-seven cows were found in bad physical condition. Seven were found with ulcerated udders, evidently tubercular in character. If the New England per centage be taken as an average, we should expect to find among the cows supplying our milk, 192 tubercular animals. Of the seventy-seven in bad physical condition, a number manifested symptoms of pulmonary tuberculosis. If the "tuberculin test" had been applied, in all probability, a large majority would have been found infected and unfit for milk production. The milk of one in four tuberculous cows, according to Bangs, is infectious. As dairymen mix the milk, it is easily understood how the product from a single animal, with ulcerated tuberculous nodules of the udder, would contaminate the entire supply and prove a menace to consumers.

The detection of tubercle bacilli in milk of tuberculous cows is attended with considerable difficulty. The inoculation of lower animals with infectious milk gives more positive results. Bollinger, a

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continental veterinarian of eminence, found the milk of eleven out of twenty cows infectious by inoculation, while the bacilli were found in but one sample. His experiments are corroborated by Freidberger, Verneuil, and Arloing. It seems probable that in many cases only the spores of the bacilli are present in the milk.

Recent investigations show that the milk of tuberculous cows may be infectious, and the udders to all appearances perfectly sound. Hiersherber inoculated rabbits with the milk from tuberculous cows in which the udders were free from nodules. Fourteen cases developed. Professor Bang, of Copenhagen, after extensive investigations, reports that one-tenth of animals inoculated with milk from tuberculoous cows with sound udders, became tuberculous. The experiments of Drs. Ernst and Peters, of Massachusetts, lead them to conclude that milk from cows with tuberculosis in any part of the body may contain the virus.

It is easy enough to demonstrate the communicability of tuberculosis upon lower animals, through inoculation with infectious milk. With man, such experiments are not practicable. Many cases, however, seem to afford conclusive proof. Demme had four infants die, due to intestinal tuberculosis. They had been fed upon unsterilized milk from a cow with marked tuberculous lesions. Olivier reports thirteen cases of tuberculosis, chiefly intestinal, among girls in a boarding school. The cases developed within three months, and seven of them proved fatal. The fact that tuberculosis of the intestines and mesentery occurs in children most frequently, is additional evidence that milk is the infective medium, since that constitues their food. Cooking destroys the germs and renders tuberculous milk safe. Its practical application in milk sterilizers for private families and hospitals and the establishment of public sterilizing depots for the poor, has resulted in great saving of infantile life from intestinal tuberculosis.

The facts herein set forth are sufficient to emphasize the need of thorough and systematic inspection of dairy herds and dairy barns by competent persons. The department of health should be vested with power by law and ordinance to license dairymen; to compel proper sanitary arrangement in cow stables; to condemn tuberculous cows and render compensation for the same and to apply the

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"tuberculin test" in cases in which there is doubt as to diagnosis. In competent hands the "tuberculin test" is now known to be almost infallible. Inspections should be of such frequency as to insure compliance with requrements of the department.

The existence of tuberculosis in meat has long been known. The sale of tuberculous meat was forbidden in Munich as early as 1730, and later, in other German cities. It is recorded in the recent work of Freidberger and Frohner that in 1677, twelve pupils in a Liepsic school contracted intestinal tuberculosis from eating infected meat. Sanitary laws of that day required the killing and destruction of tuberculous animals. Recent statistical data from foreign cities, where rigid inspection for tuberculosis of meat is made in slaughter houses, show the following percentage: Baden, one-half per cent.; Munich, two-elevenths per cent.; Berlin, four-fifths per cent.; Paris, six per cent. Doctors Woodhead and Martin fed the raw meat of animals with tuberculous organs to pigs, guinea pigs and rabbits. Five out of fourteen pigs, two out of thirteen rabbits, and twenty-four out of one hundred and forty-five guinea pigs became tuberculous.

Prussian law defines meat of tuberculous animals as unfit for food when there is: generalized tuberculosis; that is when two or more organs are infected, showing metastases through the general blood current, when meat contains tubercules; and in advanced emaciation, even if the tubercular lesions are localized. If the tubercular disease is clearly localized to one organ, the meat may be consumed, provided the viscera are removed with care to avoid smearing muscular tissues with tuberculous matter.

Tuberculosis is much less frequently communicated to man through meat than through milk. This is owing to the fact that meats are usually cooked. The experiments of Dr. Woodhead to determine the influence of cooking upon tuberculous meat are of interest. Ordinary boiling or roasting sterilizes the surface and substance for some distance from the surface, but cannot be relied upon to sterilize tuberculous material in the center of rolls of meat of greater weight than three or four pounds.

To insure for the local markets of our American cities a wholesome meat free from tuberculous matter, a more extensive adoption

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of the abattoir system in vogue on the continent is necessary. This enables thorough inspection of the carcasses as they are slaughtered, at a comparatively small expense. When slaughter houses are scattered in different parts of the city's environs, as in this and most other American cities, the proper inspection of carcasses for tuberculosis is impracticable, except at an expense greater than municipal bodies are willing to incur. Under a false notion of economy, the provision for meat, milk, and other food inspection in this city is wholly inadequate. If all the slaughtering were done at one place (the abattoir sysem) both better sanitary conditions could be maintained and the public could be assured of a wholesome meat, free from tuberculous and other disease processes.

While there is no question as to the important role of meat and milk of tuberculous animals as causative factors in the production of the disease in man, without any doubt the most common medium of infection is dried tubercular septum. The alvine discharges of those suffering from intestinal tuberculosis is likewise rich in bacillary material, and is a source of danger. Pus from cold abscesses, lymphatic glands and tubercular joints, contains bacilli and should be destroyed without permitting to dry. Lupus and tubercular wart, however, contain germs in such spare numbers that they may almost be considered non-infectious. Cornet was first to show by his important work, the danger of inhaling the dried sputum of consumptives. Numerous investigations have proved that expired air contains no tubercle bacilli. The sine qua non of dessinmination is dessication. This applies to tubercular products of whatever sort. Dried and pulverized sputum finds ready access to the lungs by inhalation. Considering the reckless frequency with which consumptives discharge expectorated matter upon carpets, walls, floors, sidewalks, etc., where it dries and mingles with the dust of the atmosphere, to be breathed by healthy persons, the wonder is that all do not become infected. In this connection, Flick's study of the mortality from tuberculosis in Philadelphia from 1861 to 1891, is of interest. No decrease in the death rate from this disease occurred until the doctrine of its contagiousness began to be taught. From 1881 to 1891 an average yearly decrease of 784 deaths was recorded.

Granting the contagious nature of tuberculosis, what measures

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of public hygiene would be wise and humane ? What action should be taken by public health authorities to prevent its spread? Wishing to ascertain what practical measures had been adopted by public health bodies in other cities, to prevent the spread of tuberculosis, the following questions were propounded to the chief health officer in each city:

1. Has an attempt been made to eradicate tuberculous cows from the dairy herds supplying milk to your city ? Has tuberculin been used as a diagnostic test ?

2. Is inspection for tuberculosis made of carcasses of animals slaughtered for your local markets?

3. Does your local department disseminate any literature concerning the contagious nature of consumption, and the causes to be pursued to prevent its spread?

4. Have you any law or ordinance requiring physicians to report cases of tuberculosis?

5. Do you disinfect or fumigate where cases have occurred?

Satisfactory responses were obtained from twenty-six of the largest cities. Of the twenty-six, sixteen make the inspection of dairy herds; ten do not. In twelve of the number, the "tuberculin test" has been applied, generally with satisfactory results. Meat inspection for tuberculosis is made in fourteen. In eighteen the health department disseminates information and instructions upon tuberculosis. The state boards in eight states issue literature upon the subject. In six cities there is a law or ordinance which requires physicians to report cases of tuberculosis, while in three the health board urges physicians to do so. In only seven cities do they pretend to disinfect or fumigate where cases have occurred.

The foregoing data show that public action in this matter is becoming rapidly more general. The question for us to decide is, what shall be done in our own city?

Any move in this direction by the department of public health will be attended by difficulties. In the matter of reporting cases, the difficulty of diagnosis in the earlier stages arises. The health board could here offer valuable assistance by making microscopical examinations when requested. In a number of cities this is done free of charge. Families would often object to having it know that a mem-

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ber suffered from the disease. To incipient cases, it may with justice be claimed, that the delivery of a circular letter upon the infectious nature of tuberculosis would prove cruel and depressing to the patient. Advanced cases of the disease and those in public institutions might be reported without giving offense to anyone. To families where a death has occurred, instructions with propriety might be issued and the apartments disinfected. Any official instructions upon this subject should have due regard for the feelings of the patient. It should also be made prominent that tuberculosis in its earlier stages is a curable disease, and, with proper regard to instructions, there is no danger of contracting the disease.

It seems to me the attitude of state and local boards of health in relation to this question, should be that of a diplomatic bureau of education. The cardinal principles to be impressed upon the laity are that sputum contains the infective germs; that it should not be scattered broadcast; and that it should never be permitted to dry without destruction. The public may be made to understand that hotels, stores, railway coaches, factories, much frequented buildings of whatever sort, and more especially hospitals and public charitable institutions, should be amply provided with cuspidors containing a liquid disinfectant.

In conclusion, let me say that much is to be expected from the profession in furthering the interests of public hygiene in reference to this disease; by using all possible measures afforded by the scientific advancement of the day, to diagnose the disease early, when it is curable; by advice against marriage; and by sympathetic and earnest co-operation with the public health authorities. With the present city sanitarian, we believe the medical profession of the city may act in harmony in the accomplishment of great good in this most important hygienic question.

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PRESENT PROBLEMS CONCERNING TUBERCULOSIS.

THEODORE POTTER, M. D., INDIANAPOLIS.

Tuberculosis kills from one-seventh to one-sixth of mankind among civilized nations. When it is remembered that it affects frequently not only the lungs, but the brain, the serous membranes, the intestines, the genito-urinary organs and lymphatic glands, and not infrequently other parts, it will be seen that this is no exaggerated estimate. Indeed, there are those who, upon careful scrutiny of the death returns and the records of the postmortem tables, declare that about twenty per cent. of all deaths are due to this disease. It kills more than scarlatina, diphtheria, typhoid fever, cholera, and yellow fever combined. It has taken the place occupied a century ago by smallpox. Tuberculosis is to-day the scourge of the race.

The last thirty years, moreover, has brought great additions to our knowledge of tuberculosis, such additions, indeed, as to cause not only a modification, but a revolution in our views of the disease. No apology, therefore, appears necessary for asking the society to spend an hour considering some of the present problems concerning tuberculosis. The disease is one which we all constantly confront, and must as constantly study. It is a commonplace truth that when we are about to attack a great evil, the first thing to do is to look about us to see just where we stand, and to get clearly before our minds the facts.

Let us, therefore, take a brief survey of recent progress in the pathology of tuberculosis, and try to come to an agreement as to what may be called, after the manner of the law courts, the facts in the case.

The modern history of tuberculosis may be said to have begun with the epoch-making experiments of Villemin in 1865. This investigator announced as the outcome of a series of experiments upon

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animals, that tuberculosis was an inoculable, a transferable disease. He had repeatedly succeeded in inducing tuberculosis in healthy animals by inoculating them with material from the lesions of tuberculosis.

It was and is sufficiently easy to repeat Villemin's experiments and to confirm his statements. Yet, though his announcement aroused much interest and even controversy among pathologists, it did not attract much attention, nor exert much influence in the field of practical medicine. The reason for this apathy was that the inferences made from Villemin's demonstrations, as to the specific infectious character of the disease, were stoutly opposed, not only by the clinicians, but by pathologists themselves. And for this pathological skepticism there was also a reason. Pathologists are agreed that the most rational, and therefore most satisfactory, classification of disease, is that upon an etiological basis. Yet at the time referred to both the pathogenesis and the pathological anatomy of tuberculosis were in a condition which we now recognize as insufficient and faulty. There was no fixed and certain sign of tuberculosis. When, therefore, other experimenters came to repeat and enlarge upon the experiments of Villemin, it is not surprising that there were discordant conclusions. Some affirmed, while some denied. Some claimed to produce tuberculosis by the inoculation of non-tuberculous matter, such as the ordinary dust from rooms, and from other supposedly inert substances. It must be remembered that modern bacteriology was then unknown, and experimental pathology was far less perfect than now. The experimenters did not know how to direct their work along exact lines. More than that, they did not know just what they were driving at, for they did not know just what tuberculosis was, nor how to identify it with certainty. When, by the inoculation of ordinary house dust, they produced tuberculosis, they did not know that they were introducing tubercle bacilli. And when, by the introduction of inert matter, they produced lesions, showing a more or less close resemblance to tubercle, they thought they were producing tuberculosis. It is no wonder that they only made the confusion worse than before, for there was, in the facts which they brought to light, sufficient to throw doubt upon the specific infectious nature of tuberculosis.

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Yet, in the midst of all the confusion, the fact demonstrated by Villemin remained unshaken, that, whether specific or not, tuberculosis could be regularly transferred to healthy animals, and that therefore it was to be looked upon as a transferable, an inoculable disease, an infectious disease.

The next and logically necessary question was: Is tuberculosis transferable always and only through the agency of tuberculous material; in a word, is it a specific infectious disease?

It remained for the genius of Cohnheim, at first a skeptic, but finally a convert to the doctrines of Villemin, to lead in bringing the answers to this question. By an interesting, indeed a beautiful, series of experiments, conducted with admirable exactness, he, with others, succeeded in demonstrating to the satisfaction of the great majority of competent pathologists that tuberculosis was always and only to be propagated by tuberculous material, and that, therefore, it took its place in pathology as a specific infectious disease.

Even yet the world of practical medicine was not sufficiently convinced and impressed. It had not yet learned the lessons of modern bacteriology. The general problem of the exact nature of the infectious diseases had not been solved, nor had the solution come home, as it has in our day, to the minds of the mass of practicing physicians.

One more question remained to be answered by the pathologists before the clinicians and sanitarians could be fully convinced and aroused. If tuberculosis is a specific infectious disease, what is the specific agent by which it is caused and propagated? What is the specific mark by which we may always and everywhere recognize tuberculosis?

All the world knows that this question was finally and fully answered by Robert Koch, when, in the spring of 1882 he announced to the Berlin Physiological Society his discovery and demonstration of the existence, the character, and the specific causative agency of the tubercle bacillus. He showed that it was constantly present in the disease; that, being obtained in pure culture, it would regularly produce tuberculosis; that it belonged to no other disease, and that, being the specific cause of tuberculosis, certain disorders, whose exact nature was as yet uncertain, were turberculous in character.

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He showed its tenacity of life, under adverse circumstances, and that, even after long separation from the body, it might still be drawn from its hiding places with virulence apparently unchanged. He showed how it might be recognized and distinguished from other bacteria, and thus be made of everyday practical use in diagnosis. He expressed the firm conviction that the disease was propagated among human beings chiefly through the scattering abroad of the germ-containing material, and thus he pointed out the one direct way of controlling its spread.

These things he showed with such completeness, with such clearness, accuracy and force, that the medical world soon gave assent to their truth.

And thus the chapter upon the modern history of tubercular pathology became complete. It remained and remains to learn its meaning and its lessons.

We must recognize the present almost overshawdowing importance of tuberculosis and the consequent call to action against it; we must recognize the increased responsibilities growing out of increased knowledge. When, therefore, in the endeavor to prepare ourselves more successfully because more intelligently to meet the modern problems of tuberculosis, we ask ourselves what are the facts which are to guide our thinking and our acting, the answer comes thus: The progress of knowledge has warranted us in assuming as a basis for a plan of campaign, that tuberculosis is an inoculable, a transferable or infectious disease; that it is a specific infectious disease, due and due only to a known and recognizable germ without whose activity it does not and cannot exist. That the recognition of the germ affords a positive, and the only known positive means of diagnosis. That this germ is present, living, virulent and strongly tenacious of life, in the discharges from the tuberculous lesions. That the most exacting investigation and experiment fail to show that by any other agent or combination of agents is the disease produced or propagated. That other factors in the production and propagation of tuberculosis are but contributory to the direct and vicious agency of the tubercle germ. In the center of the whole question of tuberculosis to-day stands the tubercle bacillus.

"The diagnosis of tuberculosis has now removed itself from a

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merely anatomical basis. Where tuberculosis exists, there exists the tubercle bacillus; and where the tubercle bacillus is found flourishing there exists tuberculosis." (Strumpel.) The pathological classification of the disease has also changed from an anatomical to an etiological basis. Tubercular lesions are not simply nor most accurately defined as those characterized by certain anatomical structure; they are those lesions produced by the growth of the tubercle bacillus. This first, other things afterward.

There are many contributing factors in the causation and propagation of tuberculosis. Their name is legion and their features as numerous and varied as disease itself. But without the tubercle bacillus there is and will be no tuberculosis. If, in the absence of a specific therapy we hope to control tuberculosis by controlling these contributing factors, that hope will be realized when men are born free from inherited tendencies and congenital disorders, go through life free from the majority of the diseases which now attack them, and from the accidents which befall them, and when they become insusceptible to the injurious influences of climate and modes of life. It is as idle to think of thus controlling the disease as to think of controlling the north and east wind. We may temper the wind to the shorn lamb, but it will still shiver before the blast till we have stayed the shearing hand. The sun must shine, and the rain must fall, and the soil must be fruitful that the wheat may grow. But who would expect to reap a harvest without planting the seed? without the seed there is no harvest. Without the tubercle bacillus there is no tuberculosis. The agriculturalist has long since learned his lesson; we have yet to learn ours. When we have become fully convinced of these truths and have come to understand their meaning, even with its many limitations, we shall be ready and impelled to attack that problem concerning tuberculosis which immediately and most pressingly confronts us, to control the spread of the tubercular poison. He who shows us how best to do this, points out the most direct and efficient method at present of controlling the disease.The time has now come when we ought to ask ourselves whether we really believe these things, and whether we are ready to act upon that belief. That we may be the more convinced of these truths, may we more fully appreciate their meaning, and may have a clearer view of the indications for and lines of action, is the purpose of this paper.

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IS CONSUMPTION CURABLE?

JOHN B. FATTIC, M. D., ANDERSON.

On examining the literature on tuberculosis one is likely to be surprised at the high per cent. of recoveries given by most authorities in comparison with one's own clinical observation, for if a patient suffering from the classical symptoms of this disease should recover, we are apt to believe that he must not have had it, but rather had some other malady, and, conversely, if he had died we would have been prone to charge the cause to tuberculosis, and it is in this way that one's clinical experience without postmortem examinations may lead one to estimate a very low per cent. of recoveries from consumption.

The old physicians knew of no signs by which the presence of tubercles was revealed in life before the expectoration of pus and the advent of hectic fever. It never occurred to them that tuberculosis might have had its cause from without the body altogether, notwithstanding that its contagiousness was urged long before it was proven to be a primaray disease.

Virchow nearly destroyed belief in the specific character of tuberculosis and avowed it was a product of retrograde metamorphosis, a tissue necrosis, with reabsorption of the fluid element, and caseation, says Whitaker, became a kind of keystone in the arch of this pathology. Some one even proposed the name tyrosis (cheesy-change) as a substitute for tuberculosis.

Some claimed they could produce tuberculosis by the intra-vascular injection of small bits of solid material, such as elder pitch, bits of leather, etc., but no one has ever been able to produce tuberculosis without its specific germ.

Pulmonary percussion and cardiac ausculation had been practiced in the time of Hippocrates, yet it is remarkable that after 2,000

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years it remained for Laennec to discover in pulmonary ausculation the means of detecting the early presence of tubercles; he believed that pectoriloquy was a veritable sign of phthisis and could be detected long before any other symptoms. He gave a much more favorable prognosis in tuberculosis than formerly, on account of his ability to make an early diagnosis, notwithstanding that his accomplishments had led to the exclusion of some other disorders previously termed tuberculosis. He also saw no difference between lung tubercles and scrofulous glands, which generally end in recovery.

The discovery of the bacillus tuberculosis and subsequent elaboration of knowledge concernng tuberculosis have narrowed the varieties of this disease down to two distinct clinical forms, viz., acute and chronic tuberculosis. The prognosis of the former is well depicted by its synonyms of phthisis florida or galloping consumption, and the medical man can scarcely get his therapeutic agents in operation before the fell destroyer has made away with its victim.

We are told that chronic pulmonary turberculosis is not necessarily a fatal disease, that it may be arrested if taken early in a large proportion of cases, and that even in the advanced stages with cavities, it is often possible to arrest the morbid process or to at least prolong life considerably.

There certainly is reason to be deeply concerned when we remember that one-seventh of all mankind is killed by tuberculosis, and of all fatal chronic diseases it forms two-thirds of the total.

Let us glance at the statistics of recoveries from consumption as shown by autopsies. An observant person who makes many postmortem examinations is soon aware of the fact that it is the exception to see perfectly normal lungs, or lungs which are not more or less adherent to the chest wall from old inflammation, and he will learn that often times there once had been destruction of lung substance more often in the apex, which before death had healed, leaving dense circumscribed masses, varying from one-third of an inch to two inches in diameter, sometimes having a cheesy or calcareous center or, perhaps, a completely encysted cavity.

As evidences of cured tuberculosis Loomis has submitted reports of over one thousand autopsies, of which number three hundred and

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eighty-three were made on persons who had died of tuberculosis, or showed a tubercular process in their organs. Of the remaining seven hundred and sixty-three, the autopsies were made on non-tubercular subjects, and of these two hundred and seventy-six, or thirty-six per cent., showed lungs which were bound by organized adhesions to the chest wall. In all of these two hundred and seventy-six cases the lungs were free from disease, excepting the pleuritic adhesions, which generally interfered with perfect lung expansion, as microscopical sections of the lung tissue clearly proved.

Of the seven hundred and sixty-three persons dying of a non-tubercular disease, seventy-one, or over nine per cent., presented changes in their lungs, which were undoubtedly characteristic of healed pulmonary tuberculosis. This is a higher per cent. than some observers have given; thus, Williams, of London, states that in one thousand cases of phthisis a cure was effected in 4.6 per cent; Flint, in 640 cases, gives report of 44, or 6.5 per cent., recoveries.

But these figures were reached from physical and postmortem examinations, and when we study tuberculosis from a pathological standpoint we can find more hope.

Vibert found in seventeen out of one hundred and thirty-one persons dying from violence, evidences of pulmonary tuberculosis, which had healed—a little over 12 per cent.

Coates stated that in 103 persons dying of non-tubercular disease, 20 showed evidences of healed tubercles—over 19 per cent.

Fowler reported cures found in 177 cases out of 1943 autopsies—9 per cent, and Martin saw 42 cases healed in 445 necropsies—9.4 per cent. In the above list of several thousand cases there were over 9 per cent. of cures. Thus it must be evident that there is a higher per cent. of recoveries from tuberculosis than clinical observation alone will prove, but a very pertinent question at this point is, how can it be said in truth that tuberculosis is cured from the appearances which are found?

"If by the term 'cured tuberculosis,'" says Loomis, "is meant a complete restoration of the affected portion of the lungs to a normal condition, we can say that it never occurs; but if it is meant that all pulmonary symptoms cease, that the patient has good health and that the damage to the lungs is not sufficient to prevent an adequate

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use of their functions, and that the tubercle bacilli, if present, are rendered inert by the connective tissue, which surrounds them, and are finally destroyed, then we can say that a cure takes place in very many cases—a number much larger than is generally supposed."

It is hardly possible to understand how recovery from primary or secondary areas of tubercular deposit in the lungs can take place by the absorption of the tubercular products and restoration of the tissues to a perectly normal state. If, then, every case of tuberculosis, although cured, leaves its permanent stamp on the tissues, what are the steps by which an exceedingly destructive process becomes arrested and cured?

Loomis again: "At the borders of the pulmonary tissue, surrounding areas of tuberculosis, new connective tissue is to be seen just forming. This is derived from an infiltration which rapidly becomes changed into new connective tissue cells, changing into dense fibrous tissue. This newly-formed fibrous tissue is seen to completely sorround the tubercular area, forming an effective barrier to the advance of the tubercular process and eventually contracting and obliterating the alveolus, which is substituted for new connective fibrous tissue. It is not now believed as formerly that the tubercle itself furnishes any of this fibrosis and it is also noticed that while the bronchi are often almost obliterated by the contracted new connective tissue the lumen of the blood vessels is scarcely ever interfered with, no matter how extensive the fibrous tissue, on the contrary new capillary vessels are seen everywhere surrounding the tubercular areas.

An unobstructed circulation and an intense hyperemia are conditions so constantly present in active fibroid processes as to make it evident that they are essential to the cure of tuberculosis. In the cases of healed tuberculosis the tubercle bacilli are absent in nearly every instance.

The effect of a localized or general pleurisy on the underlying pulmonary structure is of much importance in the pathology of tubercular cases, for it has been demonstrated by several competent observers that the lymphatics of the lungs run in the inter-lobular structures toward the pleura, at least those located in the outer third of the lungs, and the products of tubercular tissue destruction are

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carried in these lymphatics outward to the plenca, causing a local pleurisy, the extent of which depends on the area of affected lung.

The pleuritic friction sound may be the first sign on physical examination of beginning tuberculosis and consequently it should have a very important significance, perhaps ante-dating any other physical sign.

It should be remembered that it is not the tubercle that undergoes healthy change, but the normal connective tissue surrounding it, and which is capable of resisting the spread of the tubercular process. It is well known that loss of tissue from any cause is followed by a new growth of fibrous tissue to replace in a measure the lost substance. May not this process be a conservative attempt of nature to deal with the tubercle? If so, then we must learn how to promote the fibrous growth with sufficient intensity to be effective without harm to the patient.

Cullen, over one hundred years ago, said: "It is a question whether failure in curing consumption is to be imputed to the imperfection of our art or to the absolutely incurable nature of the disease. The latter I am extremely adverse to admit, while readily allowing the former, for I do not despair of a remedy being yet discovered."

The old authorities believed in "keeping down the inflammation," and this was done by a vegetable and milk diet, sea travel and horseback riding, which later Sydenham declared was "as much of a specific in consumption as the bark in ague or mercury in venereal disease."

Aretaeus of old said that " Milk sufficeth in place of all food, it is easy to take, gives solid nourishment, and in color is pleasant to see. As a medicine it seemeth to lubricate the windpipe, to clean the bronchi as if with a feather, to bring off phlegm, improve the breathing and facilitate the discharge downward. If one will only drink plenty of this milk, he will not stand in need of anything else."

In 1882 Koch immortalized himself by the discovery of a microorganism in tuberculous matter, differing from all other germs in its peculiar reaction to coloring matters—a resistance to some and a strong affinity for other stains, in spite of decolorizers. This bacillus is found in all cases of tuberculosis, the disease does not exist with-

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out it, it can be isolated from other germs, and only it alone will cause tuberculosis.

The definite pathology and etiology of consumption are therefore positively known, and as Koch says, "When the infectious nature of tuberculosis is generally recognized the means of its cure must develop themselves." And further: "Dessication of tuberculous sputum does not destroy its power of infection, as animals inoculated with sputum dried for eight weeks showed the same infection as after the use of fresh matter. It is therefore fair to assume that the chief infection of man results from the inhalation of the universally disseminated dried sputum."

In this same sense it is well to remember that tuberculosis is essentially a disease of extra-uterine life, that tuberculosis of the foetus never occurs, and if hereditary, a fact not altogether disproven, it is not congenital, and finally, that it is not hereditary as a disease, but as a disposition.

It is equaly interesting to note the law of Louis, which is that "after the age of fifteen tubercles do not present thmselves in any organ without being likewise created in the lungs."

In conclusion, it is pertinent to inquire if antitoxin serum can master the diphtheritic germ and certain other serums destroy their particular antagonists, why is it not possible to successfully destroy the tubercle bacillus with some kind of antitubercle serum?

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AUTO-ACTIVITIES OF THE HUMAN ORGANIZATION.

JAMES F. HIBBERD, M. D., RICHMOND.

Why are we hungry? Where is the seat of hunger located, and how are we made conscious of hunger?

This compound question at first glance seems a very simple query and would be comprehensively answered by saying our system needs food and our stomach makes us conscious of that fact, but to answer it scientifically and completely involves the consideration of some exceedingly important phenomena of our complicated bodies, covering both the formation of tissues and their physiology; the query in fact present a far-reaching problem covering all the vital movements of human existence, the solution of which would open arcana of nature, wherein are executed all the processes of biologic, energy, both physiologic and pathologic, and this for the reason that hunger is the result of certan essential branches of our auto-activities, and to understand these is to have a knowledge of the entire range of such activities.

All vital activity is manifested in cells, and is either volitional or automatic.

Volitional activity is that operative under will power, and recognized by consciousness. It includes all activities ordered by the normal mind and accomplished under its direction. This constitutes the relation of individuals to the public and to each other—in brief, embraces all the acts of people as individuals or in masses open to ordinary observation, or testified to by results that point to the operation of a like phase of energy. This is the activity in man by which we know him individually, estimate his worth, and classify him by a comparison with other men. The general nervous system is the instrumentality by which voluntary activity announces its conclusions and executes its decrees.

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Automatic activity is the operation of energy inherent in cells as an endowment by the Creator, and as a rule is constant while life continues. It works with seeming intelligence and discretion for the progress and preservation of the individual and the perpetuation of the species. Volitional activity provides food, automatic activity digests and assimilates it to the service of the body and the mind. An impregnated cell in the maternal ovary is the beginning of individual man, and it is the activity inherent in that cell that initiates development and maintains it through the marvelous transitions that intervene between the conjugated ovum and the termination of intrauterine life. Nor does the auto-energy cease, or even lag, at this point, but works on a different schedule in which food through the buccal orifice of the new-born and oxygen through the breathing of atmosphere supercede the scheme of nutrition that sufficed in the mother's womb. In the new role the auto-energy is as forcible in evolution as ever, and in further development of the new-born presently produces the intellectual apparatus which had no existence at birth, but is henceforth to direct the volitional activity of the organization and that will, to some extent, modify the current of auto-activity which built the apparatus. In the earlier stages of embryotic life the auto-activity endowment of the cells is sufficient to secure uniform, harmonious and reciprocal development, but possibly in the later period of foetal existence, certainly at once after birth, the many and various organs, each with a special function, calls for some mode of intercommunication that shall maintain the service in harmonious reciprocity. With forethought—if I may use such an expression in this connection—the auto-energy of the embryotic cells has already prepared the sympathetic nerve, which is not only the channel of intercommunication among the organs, but is also the line of intercouse between the automatic and volitional activities. Hence, when the exhaustion of pabulum has wrought the systemic demand for more food, manifested by the sense of hunger in the stomach, this organ, through the sympathetic, notifies the intellectual centers in the hemispheres of the demand, thus bringing it to conscious recognition and the volitional activity is set in motion to supply the demand. This concatenation of allied events is the justification of my opening declaration, that whosoever is fully advised of what hun-

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ger is, where it is located and how we are made conscious of it, has knowledge of the entire range of auto-activites of the human organization.

Whatever interest may attach to the study of cytology *per se* the value of the present lesson, must be measured by its utility in advancing the knowledge of pathology and the service of therapeutics. And, however profitable it might be to present these points in detail the time at command admits only the consideration of a general outline of the subject.

Cells, as already indicated, furnish all vital activity in living things, and the energy producing this activity is, in the beginning, the endowment of the Creator, and through continued support from the same source is maintained by nourishments. If the nourishment furnished is appropriate the activity is physiologic and the resulting condition health; if the nourishment furnished is inappropriate the activity is pathologic and the resulting condition disease. For example: Oatmeal is good food and sustains physiologic auto-activity and health. If arsenic be mixed with oatmeal it is bad food and produces pathologic auto-actvity and disease. Pure water will maintain health, but water-bearing enteric fever germs will produce enteric fever; and the atmosphere contaminated with carbon dioxide will produce asphyxia. In each of these cases it is the physiologic auto-activity of the cells that is perverted and inaugurates pathologic and auto-acitvity in the cells and disease. And it is thus in all instances, whether the disturbing agent be traumation, contagion, poison, temperature or whatever, the initial departure from the womb, the first pathologic step, is in the cell, and accordingly we say all disease is of cytogenesis The converse of this is the pregnant idea that all restoration from disease is by cytotaxis, i. e., the removal of the cause and permitting the cell to exert its restorative taxis through its auto-activity. For example: If a thorn were thrust into the arm and allowed to remain there it would excite inflammation in the tissues penetrated, i. e., the cells of these tissues, through the sympathetic, would call an extra supply of blood to their assistance, pour out fluids, loosen the thorn and float it away with inflammatory humors. The cause thus removed, the inherent restorative auto-activity of the implicated

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cells rapidly reinstates the physiologic integrity and action of the traumatized tissue. This fairly illustrates a typical example of cytogenesis of traumatic inflammation and of cytotaxis in its restoration. And this line of illustration fits every form of pathogenic disturbance, and the same principle is applicable whether the disturbance be excited by a thorn or other traumatic entity, or is of toxic origin, or the result of infection. However involved, complicated and obscure a case may be, we can rest in confidence that the principle, the elucidation of which is in this essay attempted, covers it.

In therapy a like certainty of principle obtains. If the exciter of pathologic activity is removed before the vital integrity of the tissues involved is destroyed the taxic power of the cells restores the physiologic status. The science of therapy lies in the recognition of this principle in all cases, whatever the nature or form of the pathologic exciter, and whatever the stage or complication the disorder may have reached; and the art of therapy lies in its disciple devising means and executing them to subdue the exciting cause of pathologic disorder.

Allow me to epitomize and reinforce my concept. Neither of the two factors that constitute the impregnated human ovum has a future by itself, ununited it perishes, but the two in conjunction instantly becomes a homogeneous cell that contains the potentiality of a human being with possible succession to the end of mundane tissue. This cell has nothing added to its energy, receives no new vital inspiration, but contains within itself the force to fashion a man, requiring only that it be supplied with pabulum, the material of which it has the power to convert into a living substance, identified with itself, and to leaven it with energy and attributes precisely the same as its own. Still more marvelous, this cell develops with a precision and orderly succession of events in advanced forms, and non-complicated organs, that no human provision and acumen could predicate. Indeed, we can imagine nothing short of omniscient omnipotence that could conceive this scheme of human life and execute it. The Creator endowed that single conjugated cell—mark this point—with power to develop itself through embryotic and foetal life, through infancy, manhood and age until the original cell energy ac-

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complishes its ordained mission with the senile fading from among living things.

Such is the scheme of human life as fashioned and conducted by creative power, and in all its phases and phenomena it is accomplished through the agency of the auto-activities of the human organization. If I have been fortunate in limning the picture it must impress the thoughtful physician that in dealing with prophylaxis, pathology and therapy, he has to do exclusively with auto-activities, and his satisfaction with his success will be commensurate with the fullness of his knowledge in this behalf.

The difficulty of completely tracing the auto-activities in all their ramifications in conceded, perhaps it is impossible with our finite powers, certainly at present we are far from the goal, and because we cannot demonstrate perfection to the public the way is open for the charlatan and the braggart to impose on the ignorant and credulous, but when, if ever, we shall reach such perfection on these lines that the wayfaring man though a fool may not err in fixing our status by the completeness of our work, the charlatan and the braggart will lapse and the injury they do to the world will be barred; the flowery and aesthetic, alike with the simple and vulgar, announcements of panaceas and new discoveries in therapy in public prints, lay and professional, will fade from sight; and the cool assurance of the promoters of proprietary medicines in their insistance on teaching practitioners what to do, and where and how to do it, will be as sounding brass and a tinkling cymbal floating on the passing breeze unheeded to extinction; while Christian Science, faith cures, hypnotism and their congeners, each of which may have a modicum of virture, will be made patent to the world and accepted at their intrinsic value. When our knowledge of biology shall be perfect our status as disciples of the healing art will be supreme, and not until then.

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THE DIAGNOSIS OF GASTRIC CANCER.

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I have chosen this subject because of its growing importance by reason of the undoubted rapid increase in the number of cases of this disease, and because of the difficulties, frequently encountered, in making a diagnosis in cancer of the stomach have been met with in a case that has been under my care during the past six or seven months, thus making it convenient to review them at this time. I think there can be no doubt that cancers in general, including cancer of the stomach, have been increasing in frequency in recent years, more rapidly than any other known disease. This opinion is based upon my own observation and experience, as well as upon the statements of other observers, and the statistics of various countries. Williams, of London, in his recent work on "Tumors of the Breast," estimates the number of cancers in England and Wales in 1840 at 4,500, and in 1895 at 40,000. I have recently seen statements from reliable sources showing that the increase in the frequency of this disease in America is in about the same ratio. I am convinced by my own observation that cancer occurs with much greater frequency in this locality than it did fifteen or twenty years ago. This rapid spreading of a malignant disease and our failure, thus far, to find a cure for it, are among the opprobria of modern medicine. At least one-fourth of all cases of primary cancer occur in the stomach. For several years past, in addition to the cases of this disease that I have seen seated in other parts of the body, as the face, breast and uterus, I have seen each year one or more cases of cancer of the stomach. The experience of other members of this society with this disease may have been much larger than mine. Any of us is liable to be called upon at any time to make a diagnosis in one of these cases. In view of these facts we can no longer dismiss the subject lightly, as we

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might have done formerly, with the plea that we rarely have to deal with it.

The diagnosis of gastric cancer can generally be made before the death of the patient, but a positive diagnosis in the early stages, even of typical cases, is rarely, almost never, made. I believe a careful study of the symptoms of this disease will enable us to make a much earlier diagnosis than is usually made.

We will omit from the discussion the so-called latent cases, in which the cancer of the stomach has produced no symptoms up to the time of death, and those cases in which general symptoms only are present, as general marasmus or pernicious anoemia, gastric symptoms being absent or insignificant. We will consider those cases only in which the symptoms point to some disease of the abdominal viscera.

Either a part or all of the following symptoms are present in these cases: Loss of appetite, indigestion, vomiting, either with or without the admixture with blood; pain, a tumor in or near the epigastric region, progressive loss of flesh and strength and the so-called cancerous cachexia. Welch describes a typical case of gastric cancer thus: "A person, usually beyond the middle age, begins to suffer from disordered digestion. His appetite is impaired and a sense of uneasiness, increasing in course of time to actual pain, is felt in the stomach. These symptoms of dyspepsia are in no way peculiar, and probably at first occasion little anxiety. It is, however, soon observed that the person is losing flesh and strength more rapidly than can be explained by simple indigestion. He becomes depressed in spirits. The bowels are constipated, vomiting, which was usually absent at first, makes its appearance and becomes more and more frequent. After a while it may be that, without any improvement, the vomiting becomes less frequent, comes on longer after a meal, but is more copious. In the latter periods of the disease a substance resembling coffee-grounds and consisting of altered blood is often mingled with the vomit. By this time the patient has assumed a cachectic look. He is wasted, and his complexion has the peculiar pale, yellowish tint of malignant disease. Perhaps there is a little oedematous pitting about the ankles. During the progress of the disease in a majority of the cases an irregu-

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lar hard tumor can be felt in the epigastrium. While one or another of these symptoms may abate in severity, the general progress of the disease is relentlessly downward. Within six months to two years of the onset of the symptoms, the patient dies of exhaustion."

While I have seen all of these symptoms in different cases of gastric cancer, I cannot say that I have ever seen all of them occurring in the same case in the regular sequence given by Welch. I do not believe this typical course of the disease will often be met with, and the man who waits for it will rarely make a correct diagnosis. Some of these symptoms occur in every case, but their grouping and relative intensity are modified by many circumstances, such as the situation of the cancer—which may be at one of the orifices of the stomach, or in the fundus, the existence or non-existence of secondary tumors, and the individuality of the patient.

The earliest symptoms of gastric cancer are usually disordered digestion and impaired appetite. There may be also pain and vomiting. There is yet no tumor or cachexia. None of these early symptoms is peculiar to gastric cancer. They may all occur in gastric catarrh, and in gastric ulcer. Ulcer of the stomach of such severity as to simulate cancer is, within my observation, so rarely seen, that it usually can be safely ruled out. Catarrh of the stomach—chronic gastritis—is, on the other hand, a very common affection. Now, when the diagnosis rests between a simple affection, which is frequently met with, and a malignant disease, much less common, there seems to be a well established habit among physicians of deciding in favor of the less grave but more common ailment. This course is in general the safest one to pursue. In accordance with this rule the group of symptoms under consideration is usually attributed to gastric catarrh. In a majority of instances this conclusion will prove to be correct. But in an increasing number of cases it will be found later on that a much graver affection will have to be dealt with. When these symptoms are due to cancer they are never permanently removed, frequently not much relieved, by treatment. The patient in whom they occur commonly consults several physicians in turn, and it is usually several months before a correct diagnosis is made. In many cases I believe it is never made. Although it may not be possible to make a posi-

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tive diagnosis from these early symptoms, except in a few cases, I believe a careful study of them will always afford a strong probability, at least, pointing in one direction or the other, either toward the malignant disease or one of the more benign. The history of each case should be carefully inquired into. The course of the disease, in the early stages, is often so insidious as to render it very difficult—even impossible—to determine the exact time of the onset.

Sex does not seem to have much influence upon the frequency of gastric cancer. According to the statistics a slightly larger number of males than females are affected. My own experience does not agree with this, for nearly all the cases I have seen have been in males. Age, however, is an important factor in the aetiology. More than four-fifths of all the cases occur at the age of forty, the decade between fifty and sixty being the most prolific. Gastric cancer in childhood is among the rarest of diseases. I have never seen a case of cancer of the stomach in a person under forty. On the other hand, gastric ulcer is incident to an earlier period in life, more than one-half of all the cases occurring before the fortieth year. Gastric catarrh may occur at any age. I have learned to regard with suspicion the occurrence of indigestion with impaired appetite, accompanied by pain or vomiting, or both, in a person past forty, when not promptly relieved by treatment. I reserve my diagnosis in such cases, or, if pressed, declare in favor of cancer.

Of these symptoms the impairment of the appetite is of the most value because it is most frequently present. It is present in nearly all the cases of gastric cancer. It is sometimes a marked symptom before indigestion, pain or vomiting appears. It was present in all of the cases which I have had an opportunity to study. There is in some cases a special repugnance for meat. It has been determined that the gastric juice in cancer of the stomach usually, though not always, contains no free hydrochloric acid. As this alteration of the gastric juice interferes particularly with the digestion of albuminous substances, it probably explains why many patients with gastric cancer have this abhorrence for meat. This symptom was observed in several of my cases. It has been present almost constantly in the case now under observation. It is said the appetite may be preserved in exceptional cases throughout nearly the whole course

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of the disease. When this occurs the cancer will usually be found in the cardiac extremity. In gastric ulcer loss of appetite occurs much less frequently than in gastric cancer, but the patient more often refrains from food because of the pain which it causes him. Loss of appetite is also the rule in gastric catarrh, but it is usually preceded by painful digestion, distress after eating, acidity, eructations of gas, etc.

Pain is present at some time in a great majority of the cases of gastric cancer. It is a fact, however, that in a considerable number of cases there is a complete absence of pain during the early stages and in exceptional cases but trifling pain throughout the whole course of the disease. This absence of pain is said to be more common in gastric cancers of old persons and in cancers not involving the orifices of the stomach. The pain is usually referred to the epigastrium, but it may be felt in other regions as the hypochondria or even the shoulders or loins. Pain in the region of the stomach of varying degrees of intensity was complained of in all of the cases I have seen except one. I was consulted two or three years ago by a man suffering from gastric cancer in the final stage. He assured me there was no pain in the vicinity of the stomach then and that there never had been any. Pressure over the stomach did not elicit any tenderness. He said there had been some pain in the left shoulder about one year previous, accompanying the initial symptoms of indigestion and continuing a couple of months. This was all the pain he had ever complained of. At the time of my examination he was much emaciated and deeply jaundiced. I could not discover any tumor. He complained only of impaired appetite, vomiting and general weakness. He had been treated during several months for simple indigestion. I made the diagnosis of gastric cancer with secondary cancer of the liver. The autopsy three or four weeks later disclosed a diffuse cancer of the fundus, which had not involved either orifice sufficiently to cause stenosis, and secondary cancer of the liver. The situation of the cancer in this case no doubt accounts for the absence of pain and tumor.

The pain is aggravated in many cases by the taking of food, but it may not become severe until some hours after eating. In some cases the pain occurs independently of taking food. In the case

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referred to in the beginning of this paper, there was scarcely any pain complained of during the first three or four months, but always some tenderness on pressure over the epigastrium. During the last two or three months there has been so much pain referred to the epigastrium, a little to the right of the median line, sometimes extending downwards to the region of the umbilicus, as to necessitate the taking of anodynes. This pain has not been influenced at all by the taking of food. It was sometimes most severe when there had not been a gill of food taken in the previous two days.

In contrasting the pain of gastric ulcer with that of gastric cancer, I think it may be said that the former is more often dependent upon the taking of food, that it usually comes on sooner after eating, is more intense, more paroxysmal and more often relieved by vomiting. There is also pain after taking food in gastric catarrh. It is usuualy less severe and less continuous than the pain in cancer. It may be said, however, that any peculiarity of the pain as regards locality, intensity, etc., is not sufficiently constant to enable one to make the diagnosis of cancer from this symptom alone. We must take into consideration the fact, when weighing the value of this symptom, that the degree of pain complained of in this disease, as in all others, depends much upon the individuality of the patient.

Vomiting is a quite variable symptom in the early stages of this disease. It may be one of the first symptoms. It usually, however, does not appear until some time after other evidences of indigestion have been present. It usually increases in frequency with the progress of the disease, and sometimes it becomes the most troublesome of all the symptoms. The situation of the cancer has much to do with the frequency of the vomiting. When the disease is seated in the pylorus vomiting is nearly always present from the early periods of the disease. When the cardiac orifice is involved there is likewise frequent vomiting. The time which elapses between the taking of food and the occurrence of vomiting depends somewhat upon the situation of the growth. As a general rule vomiting does not occur until one hour or more after eating when the pylorus is involved. There are exceptions to this rule however. These observations apply to the early stages only. The peculiar form of vomiting seen in pyloric stenosis with dilation will be men-

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tioned later on. When the cancer is at the cardiac orifice vomiting usually takes place immediately after eating. Here the vomiting is apt to assume characteristic features. Some trouble in swallowing may be experienced. A few mouthfuls of food are swallowed, and then a vague distress is felt beneath the sternum, which is followed by regurgitation of food. This form of vomiting is highly distinctive of cardiac cancer. When the growth does not involve either orifice of the stomach vomiting may not be present at all, or be of such occurrence. It is said to be absent in one-fifth or one-sixth of all cases of gastric cancer. It would be unsafe then to exclude the diagnosis of this disease because of the absence of vomiting.

There was vomiting in all the cases I have seen. In three of them it occurred soon after taking food. In one of these the cardiac extremity was chiefly involved, as shown by the postmortem. In the other two no tumors could be felt during life. The absence of a tumor and the character of the vomiting in these cases justified the conclusion that the growth was situated in the fundus or in the cardiac extremity, though no postmortem examination was made. In another case in which there was a tumor at the pylorus vomiting occurred irregularly at first, was absent for weeks at a time, then occurred every second day and near the close, when scarcely any food was taken, hardly oftener than once a week. In the case now under treatment the vomiting has seemed to be wholly independent of the taking of food. It occurred at the time of the commencement of the treatment, was relieved for some weeks, and now for two or three months has occurred at intervals varying from two or three days to one week. In this case a tumor can now be made out at the pylorus. I think it probable that in many cases of gastric cancer the vomiting may be due to accompanying gastritis.

In this review of the early symptoms of cancer of the stomach I have endeavored to point out the difficulties usually encountered in making a diagnosis. None of these symptoms is of invariable occurrence, and none of them is pathognomonic of gastric cancer. I think it is safe to conclude, however, that when these symptoms are accompanied by progressive loss of flesh and strength, giving the appearance of a grave disease, or when the pain is somewhat contin-

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uous, not much dependent upon the presence of food and not much relieved by vomiting, or when, the patient being forty years of age or more, there is no improvement under treatment, we have to deal with gastric cancer.

Later in the progress of the disease the diagnosis is generally simplified by the continuation of the early symptoms somewhat intensified and the development of others. There is usually increased emaciation and the appearance of the so-called cancerous cachexia. There may be haematemesis or the coffee-ground vomiting. There may be a tumor and the symptoms resulting from stenosis of the pylorus—gastrectasia with its characteristic vomiting and absence of free hydrochlroic acid. Or there may be the development of secondary tumors.

Hemorrhage is a frequent symptom in the advanced stages of gastric cancer. It is usually small in quantity. Copious hemorrhages are not common in this disease. They belong rather to gastric ulcer. The admixture of a small quantity of blood with the fluid expelled gives rise to the coffee-grounds vomit. The black color is said to be due to the action of the acids of the stomach upon the blood coloring matter. Some times a part of the blood escapes into the intestines, giving rise to stools that look like tar, constituting the symptom called melaena. I have never seen a copious hemorrhage in gastric cancer, nor one in which the blood was fresh and red. In the form of the coffee-grounds I have seen it frequently. I regard this as one of the most valuable symptoms. In some of the cases it did not occur until shortly before death, and then in small quantities. In my present case tarry stools were passed frequently a month of two ago. Recently there have been several vomitings of the typical coffee-grounds.

Of all the symptoms of gastric cancer tumor, when present, is, perhaps, the most reliable. Some authorities say the diagnosis can rarely be positively made in the absence of a tumor. It is also said that a tumor can be felt in about eighty per cent. of all the cases. I doubt the accuracy of both of these statements. I believe the diagnosis can be made with reasonable certainty in many cases in the absence of a tumor. A tumor could be felt in only about one-fourth of the cases I have seen. In some of the others in which the

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diagnosis of a cancer had been made in the absence of a tumor the autopsy revealed neoplasms of such size that they would have presented palpable tumors in another location. They escaped detection before death because of their situation. In others there was found a diffuse thickening of the gastric walls, which did not appear as a circumscribed tumor. The position of the stomach and its relation to the other organs are such, that tumors in certain parts of it can be readily felt, whereas tumors in other parts of it cannot be detected at all. A tumor of the cardia cannot be felt unless it is large enough to extend down upon the body of the stomach. Tumors of the fundus, the lesser curvature and the posterior wall will escape detection unless they are large. Tumors in the anterior wall, or in the greater curvature, can usually be detected. These portions of the stomach, however, are rarely involved. A pyloric tumor can nearly always be located. The overlapping of the liver sometimes renders it obscure until it has attained a considerable size. All the tumors I have seen have been in the region of the pylorus. Their position is usually in the lower part of the epigastric region a little to the right of the median line. They may be felt in the umbilical region, and they are said to be found sometimes to the left of the median line. If the tumor is not fixed by adhesions it may change its position somewhat from the distention of the stomach or intestines. These tumors are usually hard. They can frequently be felt to be irregular or nodulated. They are sometimes smooth to the touch. When the pyloric tumor is accompanied by stenosis there follows a train of symptoms that is almost pathognomonic. The vomiting then presents the peculiarities incident to dilation of the stomach. The vomiting comes on longer after a meal. Several days may elapse between the casts of vomiting. The patient then vomits enormous quantities of undigested food, mucus and various products of fermentation. This may contain all the food taken in several meals. The stomach, when full, presents a large tumor, extending below the umbilicus.

In some cases secondary tumors may be found—most commonly in the liver. Cancer of the stomach is almost invariably primary. while cancer of the liver is secondary in three-fourths of all the cases in which this organ is affected. A large percentage of these is secondary to cancer of the stomach.

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After the statement of Von Der Velden in 1879 that there was habitual absence of free hydrochloric acid in carcinoma of the stomach, much importance was attached to this symptom for a time. It is now of slight significance as an evidence of cancer. Even the presence of hydrochloric acid is not now conclusive evidence of the absence of this disease. The acid has been shown to be present in a few indisputable cases of gastric cancer. Likewise the value to be attached to the pressure of lactic acid in the contents of the stomach as an evidence of this disease must still be left sub judice.

The so-called cancerous cachexia is not characteristic. It is not different from that occurring in other exhausting affections. It may appear early and be very marked, or it may not appear until late. In a few cases it does not occur at all.

The duration of gastric cancer is said to be from six months to two years. The patients that I have seen lived from twelve to eighteen months after the onset of the symptoms.

Death usually resulted from exhaustion.

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CEREBRAL ARTERIO-SCLEROSIS, AND ITS RELATION TO APOPLEXIES.

ALBERT E. STERNE, M. D., INDIANAPOLIS.

Our most modern text books, both on general medicine and on nervous diseases, dedicate but few lines to the subject of Arterio-Sclerosis, and some of our best works ignore this capital altogether.

For this reason, and because this affection is of extreme importance to every practitioner and neurologist it is especially adopted as a subject for scientific consideration.

Under the term Arterio-sclerosis, though a large variety of processes may be coincidently at work, should be designated a distinct affection of the vascular system, a general disease of the blood vessel walls, which, however, may in many cases be so far advanced in special anatomic provinces, as to entirely mask the signs of bodily malnutrition, by the preponderance of symptoms from the side of the organ or organs most involved.

It is my purpose at this time to dwell especially upon the cerebral variety of this affection and upon its relation to the occurrence of apoplexies, but it must be distinctly understood that in many instances a participation of other organs, notably the heart and kidneys, is common even with this variety.

Before entering upon our main topic, let us consider the disease as a whole, as an independent affection of the vascular system, a pathological process, which, during life, presents evidence of tortuosity and thickening of the walls of arteries,—and less frequently of veins,—with increased arterial tensions, and in advanced cases is accompanied by hypertrophy of the left ventricle of the heart.

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PATHOLOGY.

Pathologically considered Arterio-Sclerosis or, as it is often called, Atheroma, is a process of gradual thickening and hardening of the vessel walls, on account of which the elasticity of these walls is impaired and finally lost. This condition may be brought about in one of two ways, i. e. primarily or secondarily. (Thoma.)

Primary Arterio-Sclerosis occurs as the result of initial changes in the walls of the vessels, notably of the larger, especially of the aorta and its branches. The primary lesions are of a destructive character, i. e., Endarteritis deformans, and cause a loss of elasticity in the affected vessels. This defect in turn makes increased work on the part of the left ventricle necessary, and the latter responds with essential hypertrophy of its muscular fibres. Consequently the arterial pressure is raised. Owing to this the weakened vessel walls give way, and dilation of the vessel occurs. To overcome the dilatation there follows a compensatory increase in the connective tissue of the intima. Upon this foundation the process further develops in like manner.

Secondary arterio-sclerosis probably occurs much more frequently than primary. Here the process begins in the smaller peripheral vessels, when from some cause, there is increased resistance to the blood-flow in them, (the peripheral vessels.) The heightened resistance induces increased heart action, which in turn forces a dilatation of the peripheral arteries, and consequently slowing of the blood current. The intima then responds with a compensatory diffuse proliferation, which causes a thickening of the walls and narrowing of the lumen of more permanent nature. This is followed by permanent heightened resistance, to overcome which, the left ventricle scondarily hypertrophies. With the hypertrophy of the heart the arterial tension keeps pace, and finally the larger vessel walls,—notably of the aorta and its branches—become strained and stretched, the walls weaken, and nutritive changes take place in them. Upon this basis, in predisposed persons, the process spreads and permits the development of focal lesions in the artery walls as a secondary disturbance. In the first group this focal trouble was the primary process upon which a diffuse diseased condition was superinduced. Whether of primary or secondary origin the useful

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division into *a.* nodular, *b.* senile and *c.* diffuse forms may be adhered to.

Councilman, Trans, of the Association of American Physicians, Vol. VI.)

NODULAR FORM (CIRCUMSCRIBED.)

In the nodular form the macroscopic changes are very characteristic. The aorta presents, along its entire course, in the early stages, numerous flat projections of yellow-white or yellowish color and hemispherical outlines, situated especially about the orifice of its branches. At first these patches are scattered and involve only a part of the intima. Later they disintegrate, when the material constituting the patches degenerates, softens and breaks up into granular stuff,—the so-called molecular debris, making an atheromatous abscess.—The primary alteration is a local infiltration or degeneration in the media and adventitia, cheifly near the vasa vasorum, in reality a meso and periarteritis. These changes produce a weakening of the wall in the affected area, where proliferative compensatory changes began in the intima, particularly in the sub-endothelial structures, with gradual thickening and the formation of an atheromatous "patch," which fills out the breach in the media and adventitia, as sections of smaller vessels plainly show. Before the compensatory endarteritis takes place, rapid dilatation of the defective portions of the media and adventitia may occur, or an aneurism may be formed at these points which, in their weakened state before they are strengthened by the intimal changes, give way before the stream of blood forced against them with increased pressure.

SENILE FORM.

In this form of Arterio-Sclerosis the larger arteries are dilated, and tortuous, their walls thin but stiff, and often entire vessels are converted into rigid tubes. The first changes here also occur in the media. Secondarily the subendothelial structures of the intima undergo degeneration and calcium salts are deposited in them. Wherever softening occurs an atheromatous abscess is formed which, if it breaks into the lumen of the vessel, becomes an atheromatous ulcer, and ultimately may become an aneurism. The

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greater portion of the intima may be occupied by rough calcareous plates which here and there show fissures in which not infrequently white thrombic masses are deposited.

Microscopically we find extreme degeneration of the vessel coats, notably of the media.

Senile changes of the liver and the kidneys and of other organs usually accompany these vascular alterations. The heart may be small, but is more commonly hypertrophic, and brown atrophy of its fibres is frequent.

DIFFUSE FORM.

Here the process is widespread throughout the aorta and its branches, sometimes combined with the nodular form. The peripheral vessels are markedly affected. The aorta, and yet more its branches are dilated, the intima may be smooth, but ordinarily shows scattered elevated patches of opaque with hue, and atheromatous nature.

Microscopically the media exhibits necrotic and hyaline degeneration, involving in the larger arteries, both muscular and elastic elements.

The intima presents great increase of the subendothelial connective tissue, most marked opposite areas of advanced degeneration in the media.

The small arteries show "a thickening of the wall, due to the formation of a homogeneous hyaline tissue, within the muscular coat. This tissue contains but few cells, is faintly striated, and stains a light-brown in the osmic acid used in the hardening fluid. In many of the smallest vessels nothing can be seen of the elastic lamina, in others only fragments can be made out, in others it is preserved.

The muscular fibres of the media show marked atrophic changes Fatty degeneration of the cells can be made out both in fresh sections and after hardening in Flemming's solution. The nuclei are thin, and atophic and vacuoles are sometimes noted in them. In some arteries the muscular fibres have almost disappeared and the media is changed into a homogeneous tissue similar to that of the thickened intima." (Councilman.)

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The degeneration of the media is most marked in the smaller arteries. The capillaries are much thickened, particularly in the kidneys, where glomeruli are often obliterated and excessively haline.

In the diffuse form of atheroma, the heart shows most important changes. Hypertrophy is the rule. Fibrous myocarditis is often present, especially when the coronary arteries are involved. The semi-lunar valves may be opaque and sclerotic and hence incompetent.

The kidneys often show extensive sclerosis; are sometimes increased in size and usually hardened. The capsule is generally adherent to the organ, whose surface is rough, and exhibits atrophic areas. Analagous to the sclerosis of the arteries, there is sometimes present a similar, but not so extensive, process in the veins—a phlebo-sclerosis. In this focal process, whether it be primary or secondary, the first changes are always encountered in the media, in the form of stretching or tearing through traumatism in consequence of the increased blood-tension, (Thoma) or more frequently, probably, as an infectious-inflammatory process by way of the vasa vasorum, (Koester, Hipp, Martin) or the soluble toxic products (toxine) act directly upon the finest capillaries of the vasa vasorum, (endarteritis obliterans) and finally upon the tissues of the arterial walls, primarily.

Hence the affected vessels in the artery-wall, the vasa vasorum, become centres of a small cell infiltration, which furnish material for connective tissue proliferation, and the poorly nourished layers of the media and intima fall an easy prey to necrobiotic processes.

At the same time, through fatty degeneration foci of softening may develop (atheromatous abscess) and the detritus may be emptied into the vessel (atheromatous ulcer.) If this opening into the artery is large enough, the blood is forced into the ulcerative cavity, the walls of which bulge out gradually, (aneurism) or the layers are separated from each other along the length and circumference of the vessel by the blood which is forced between them, (aneurisma vissecaus.) In the no longer normal tissue of the media and intima, calcium salts are then deposited, in patches in the larger vessels, whereas in the smaller and smallest the entire tube becomes hardened

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(chalky.) When once the wall is affected further changes may develop rapidly, especially in cases in which the blood-pressure is permanently heightened or when, as in aortic valvular insufficiency, the difference in tension between the systole and diastole is considerable, so that with every systolic contraction the blood-stream is forcibly and suddenly driven against the no longer elastic walls. The latter then show a diffuse dilation, notably at or about the aortic arch.

In the smaller and smallest arteries which possess less elastic tissue, but a considerable muscular layer, this diffuse sclerotic process consists of a thickening of all parts of the vessel-wall, notably of the intima and adventitia. The muscularis (media) partakes of the changes to a greater or less degree, but upon this point the views of those who have specially studied this subject disagree. But all concur as to the thickening of the intima and adventitia, which, even without a hypertrophic media, would cause a considerable narrowing of the vessel lumen and in consequence, an added labor for the heart, whose enlargement then brings about dilation, stretching and perhaps tearing of the larger vessels.

ETIOLOGY.

When we consider the etiology of a process so frequently, engaging the entire vascular system we would expect *a priori* to find numerous factors at work. Some of these we doubtless do not know, but with many which play an important role in the production of the vessel-changes noted above we are well acquainted.

Among the most important factors may be mentioned:

1. Involution processes.
2. Overwork of the muscles.
3. Over-feeding and hence over-filling of the blood-vessels.
4. Renal disease.
5. Toxins of various kinds.

In individual cases several of these factors may be coincidently at work.

As an involution process, an accompaniment of advancing years, a certain degree of arterio-sclerosis may be looked upon as "physiological," dependant, first upon the quality of arterial tissue

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inherited, and second, upon the wear and tear to which it has been subjected.

Arterio-sclerotic changes are commonly viewed as incident to old age. Certainly it is true that we meet with them very much more often in older than in younger persons. However, it is a notable fact that in many old persons who otherwise show the ordinary signs of senility, there is an entire absence of atheromatosis, even in the aorta. It is therefore possible, that atheroma is not a product of senescence *per se*, but is a purely local affection primarily. Only a mild degree of arterio-sclerosis is probably a natural senile vascular change. This interpretation is of great importance in the prophylaxis of old age, for if certain noxes are active agents, and not simple ageing the main factor in the production of this affection, it is possible to counteract the untoward influences to a great extent. Etiologically,—and this is most important in treatment, we should view the many infectious and traumatic factors as essentially productive of the circumscribed variety of atheroma, whereas in the diffuse form a sort of mechanical agency—the increased peripheral resistance--ranks first, and the infectious-toxic, or simple toxic agents follow.

As traumatism, in its broadest sense, to the artery-walls we may look upon any cause which brings about a sudden and oft repeated stretching and dilatation of the vessels, such as is occasioned by lifting heavy weights, difficult gymnastic feats, severe mountain climbing, *et cetera*, all of which can, as has been mentioned before, favor the development of the sclerotic process.

Infectious factors are being more and more acknowledged as causes of focal and diffuse vascular disease, since investigations have shown that the local degenerations are directly dependant upon changes in or about the vasa vasorum on the one hand; and on the other that sclerotic patches in the larger arteries, and obliterating arteritis in smaller ones occur in young persons, even in children. (Hipp, Martin.) In all cases of the latter sort infectious diseases had preceeded. Thus, following diphtheria and other forms of angina tonsillaris; after scarlatina, variola, typhus, erysipelas and other coccus infections, (C. B. Lockwood.) Succeeding ulcerative endocarditis and probably acute rheumatism; after typhoid fever

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and pneumonia, and finally with syphilis, leprosy and tuberculosis, small colonies of specific germs may lodge in the vasa vasorum or the capillary systems, and either themselves or through their toxic products exert noxious influences upon the endothelium of the blood-vessel walls.

Simple toxic agents can, we know, contract smaller vessels, and hence heighten the blood-pressure. This we know to be true of ergot and of lead, possibly also of other substances. In addition to this contractile power lead acts also upon the parenchyma of the excretory organs, notably of the kidneys, thereby influencing the "de-poisoning" of the entire system, and calling into play another toxic factor, i. e., the action of urea and uric acid and their metabolic products. Of alcohol, to which a weighty role in the production of arterio-sclerosis, has long been ascribed, much the same may be said, and in addition we have here the mechanical effect in overfilling through excessive drink and food, (beer) a condition which in itself is of weight in the essential causation of atheroma.

In this connection the frequency with which we meet arterio-sclerosis in fat persons should be mentioned, individuals who usually indulge freely both in food and drink; this effects their adipose development and this in turn prevents sufficient active bodily exercise, and, worse still, acts deleteriously upon the heart itself. Moreover it is a notable fact that most fat people are chronic drinkers. Probably this very habit is the main cause of their fat development. It is a frequent boast of these persons that, though they drink considerably, they never get drunk. Herein lies the danger to the blood-vessels of their entire body, especially to those of the brain and kidneys. It is not the man who occasionally gets roundly intoxicated who falls a prey to disease, but the habitual drinker who never gets drunk, becomes a candidate for all sorts of vascular affections, and wherever the tendency to adiposis exists he further burdens the already overtaxed heart.

For wherever we find excessive adipose development it means additional work for the heart which is compelled to force blood through the small vessels lying in this newly-formed and very unyielding tissue in which the peripheral resistance is always con-

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siderable. At the same time the heart muscle itself may be weakened by fatty processes.

I feel much inclined to attach even more importance to action of the ptomains and leucomains of syphilis, tuberculosis and possibly leprosy, which exerts itself with peculiar intensity and constancy upon the vascular tissues, as I have elsewhere pointed out.*

Finally a factor of great moment for the incidence of atheroma is the hereditary or innate predisposition of certain persons, either on account of the poor quality of the material constituting the vessel-walls, or because of a tendency to develop fat, gout, joint-troubles and nephritis. Possibly both the poor material and diathetic tendency may work together to bring about early vascular changes.

It will be readily seen from that which has been said concerning the etiology of this affection, that we have to deal here with a great variety of causes, all of which serve to disturb the delicate regulatory action normally presented by the elasticity of the vessel-walls of the circulatory system as a whole and of special vascular provinces (the brain) in particular. In as much as the heart naturally responds to the needs of the various organs which it supplies, it is not surprising that the many changes we have enumerated above, should be followed by proportionate change of function of many organs in which the circulation has become impaired. This defect in the regulatory mechanism is doubtless the chief reason of the difficulty experienced in overcoming acute affections in persons suffering from arterio-sclerosis.

SYMPTOMATOLOGY.

The symptoms and course of atheroma are extremely various. In many cases both the circumscribed and diffuse forms remain latent throughout life, on account of the compensatory heart enlargement. In this regard it is naturally of great difference according as the afflicted individual is an old person quietly enjoying the evening of life, until suddenly an apoplexy due to rupture of a sclerotic brain vessel ends existence, or if we have a subject in the prime of life struggling to maintain himself and family. In the latter case,

* Journal of the American Medical Association, July 20th, 1895.

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the diseased condition of the vascular system almost inevitably indicates itself by an array of symptoms from the side of the heart, kidney, liver or brain.

The combination of four distinct conditions, namely, increased arterial tension, a palpable thickening of vessel-walls, notably of the radial and temporal arteries, hypertrophy of the left ventricle and an accentuated, ringing second aortic-sound is characteristic of almost every case of arterio-sclerosis. These might be aptly termed cardinal symptoms.

After the atheromatous process is once established the subsequent course of the affection may be extremely diverse, dependant for its special features upon the vascular territory most advanced in disease, or upon the accidents of existence most likely to occur. The symptomatology may therefore be most pronouncedly cardiac, cerebral, renal or otherwise, according as these special organs are most attacked. We are justified for this reason in speaking of certain "types" or varieties of the main disorder, usually the fundamental constitutional affection.

Of these types it is my purpose to dwell particularly only upon the cerebral, and upon its connection with hemorrhages from the brain vessels.

Arterio-Sclerosis of the cerebral vessels is certainly a very much more common condition than is ordinarily supposed. In fact I am inclined to believe it is relatively frequent. Both on this account, and because of its significance to physicians and patients alike, I shall attempt to formulate a concrete whole of the many symptoms ordinarily presented, so that we may be more readily enabled to make a satisfactory diagnosis and prognosis, and hence form a rational treatment of this disease.

As has been intimated, the symptoms of this cerebral type are varied and important and embrace those of many degenerative processes, both primary and secondary, acute and chronic, and they are frequently complicated by focal signs, chiefly due to apoplexies from the rupture of miliary aneurisms of small brain-vessels. We find, therefore, in many advanced cases permanent conditions of paralysis, but these are evidences only of the focal lesions of the brain proper. They are consequences of the sclerotic condition,

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and purely accidental. They are the very conditions which we seek by our treatment to prevent, and must not be confounded with the essential and often transitory signs of the vascular trouble.

It must be remembered, that ordinarily the sclerosis of the brain vessels is diffuse and widespread, and although the basal artery is commonly affected, the smaller intra-cerebral vessels and capillaries are also diseased, and that it is probably owing, to the condition of the latter, that the characteristic signs of cerebral inanition are to a great extent due. Experience has taught me that the majority of symptoms, especially in milder cases, are vague and transient, but recur frequently and are apt to grow progressively intense. Among the most characteristic symptoms may be counted the following, which together form an almost pathognomonic complex of cerebral atheroma.

DIZZINESS.

1. Vertigo of greater or less intensity is often the first sign of trouble, and, I think, that which most frequently attracts the attention of the patient and leads to consultation with the physician. It is present in nearly every case, more noticeable upon attempting to arise into an erect posture, but sometimes, and in advanced cases nearly always, constant whenever the head is raised from the support upon which it had been resting. Often the patients find it impossible to allow the head to remain free upon the shoulders. Combined with this, feeling of dizziness is commonly experienced.

2. Nausea, often leading to vomitus, a state which finds an analogue in that of ordinary sea-sickness.

3. Sudden congestions are frequent and form an unfavorable feature. Now and then these "congestive spells" are relieved by nose-bleeding, but are usually a source of alarm to the patient—and also to the doctor.

Probably in some way connected with these fluctuations in blood-supply,—possibly due to sudden vascular spasm or extreme momentary stasis with dilation.—are the serious.—

4. Apoplectiform and epilepti-form seizures, with or without transient aphasia. These attacks are usually of short duration and are of the same impress as similar occurrences in other diseases,

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notably true epilepsy and paretic dementia. They are, I think, prognostically bad when they are of frequent occurrence, and are often fore-runners of graver conditions, especially apopletic insults. Aphasia of a transitory nature occurs sometimes independently of these attacks, as do also sudden periods of half-vision or hemiopia, though these are in my experience more seldom. Recovery from these seizures may be perfect, but it is not unusual to find that sensory disturbances in the form of paraesthesias are somewhat intensified after frequent attacks.

5. Neuritic disorders, sometimes of a painful nature, may occur, and the complaints of formication, of the limbs going to sleep, of tingling sensations or a feeling of heat are rather common. All of these signs may, however, be due to local circulatory disturbances in the limbs themselves.

6. Psychical symptoms, consisting cheifly in an impairment of memory, and vague uneasiness, occur very often. Extreme drowsiness is met with now and then, but the opposite condition, i. e., restlessness, may also obtain.

7. It is very common to find intestinal and gastric fermentive conditions present in these cases. But whether these are caused by the central disease or are of purely local origin it would be difficult to determine. Possibly where the entire disturbances antedate the atheromatous affection there may be factors in the causation of the latter. At any rate it is unusual, I think, to encounter them, and moreover they demand considerable attention. It is possible, too, that these intestinal abnormalities may be due to coincident sclerotic changes in the portal system.

8. The renal symptoms, increased urination, transient albuminuria and the occasionally discovered hyaline tube casts, may also be due to local sclerotic disease of the kidneys.

9. Bronchitis and emphysema are also frequently present. The symptom-complex just described is that which appears to me to characterize most cases of cerebral vascular disease, when this remains uncomplicated by local troubles of more serious nature, such as the rupture of a sclerotic vessel or the bursting of a small aneurism. From that which has been said regarding the pathological alterations in this affection it will be readily understood, how

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many slight causes, which would have little or no effect upon healthy vessels, may here be followed by disastrous results. The rigidity of the vessel-walls, the loss of elasticity, the frequent presence of miliary aneurisms, in connection with the increased arterial pressure and ventricular hypertrophy, offer extremely favorable conditions for the occurrence of these serious accidents. Moreover it is a notable fact that rupture occurs most frequently in those brain arteries which are termed "end-arteries," or such as do not enter in any capillary subdivision. It is just in these "ends" or terminal vessels that the pressure must be most felt, and when they are sclerosed or calcified it requires but little to rupture them. Another peculiarity of those cases in which apoplexy has occurred is, as I have repeatedly noticed, the marked capillary pulsation, which can be made readily discernable by making a streak upon the fore-head of the patient. This phenomenon is usually present in but two conditions, namely aortic valvular insufficiency and granular kidney. it always indicates extreme high arterial tension, and when present in cases of arterio-sclerosis serves to show that the already heightened blood-pressure has been further increased, and in consequence the overstrained vessel-wall has given way. Capillary pulse with apoplexy is probably always a fatal sign. This intimate relationship between the diseased state of the artery-walls and cerebral apoplexy is one of grave import and should be our guide in the treatment of these cases, some of which occur in youthful persons, though it is true the majority is to be found among those of maturer years.

TREATMENT.

The treatment of these conditions may aptly be separated into prophylactic and special, in as much as we have a twofold task to accomplish, namely, the elimination of those factors which further a spread of the sclerotic process in persons who show an innate or inherited tendency to the disease, and the counteraction of existing malignant influences which may bring about serious complications in those in whom the process has once become firmly established. Proper treatment of these cases is generally followed by favorable results, for although we can do little to abolish the sclerotic process itself, strict adherence to the counsels of the physician on the part

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of the patient is usually followed by retardation of the progress of the affection where this is in its early stages, and by amelioration of the alarming symptoms in those in whom the sclerosis is far advanced.

The prophylaxis necessarily comprises many things. In every case the exact state of the trouble should be explained to the patient and his intelligent co-operation in our efforts be gained. By carefully regulating the conduct of his daily life, by scrupulously avoiding excesses in food and drink, notably alcohol in any form, and by abstaining from too arduous bodily exercise, the patient can do much to help his heart in its attempt to meet the arterial changes by a gradual compensatory hypertrophy and a consequent gradual increase in the arterial pressure to which the vessels can adapt themselves without much dilation or injury to their walls. Plenty of gentle active exercise in open air should be encouraged, but the period of exercise should be interrupted by generous pauses of complete bodily rest. Over exertion in any form must be guarded against, indoor gymnastic sports should, I believe, be for the most part avoided. Special attention should be paid to the bowels and to the urine. The former should be kept well open, the latter nearly neutral. By the use of mineral salines and an occasional sojourn at some mineral spring a double object may be gained, i. e., the blood tension may be gradually lessened by a gentle depletion of the vessels, and the bowels freed from the accumulation of substances, toxic in their nature. Whenever such toxic influences as notably abet the disease are manifestly present, they should, of course, be combatted, and in persons in whom we suspect any tendency to sclerosis, the convalescence from acute infectious affections should be carefully watched and made as lengthy as possible. Moderate diet ought to be advised, the food be plain and wholesome and fresh air in plenty be taken. Wherever the material station of the patient permits him to follow out such a careful plan of life, our measures are generally more or less successful. In the latter stages when the sclerotic condition shows itself by characteristic signs, the treatment must be largely symptomatic. Here, even more than in the earlier stages, our efforts should be directed against a further progress of the process, and the danger of cerebral hemorrhage must be con-

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stantly kept in view. Unless special reasons forbid it, this danger should be plainly stated to the patient, and, at the same time, the best way to avoid it pointed out. The climbing of stairs and other daily practices which tax the heart and raise the blood pressure must be as nearly as possible avoided. Otherwise the regulatory rules already enumerated must be strictly carried out. Above all things plenty of bodily rest. Even where the symptoms have become alarming it will be found, that absolute rest for a few days will do excellent service. If it be possible, temporary residence in a suitable climatic resort may be advised, but care in its selection should be taken and the general condition of the sufferer be taken into account in every case. High and even moderate altitudes are very dangerous.

Of the drugs not much good can be expected, except in specific cases. In these, the iodides do wonders, and they are usually indicated even where syphilis is not suspected. If the arterial tension is high nitroglycerine acts very well, and if the pressure becomes excessive, vene section is good practice. If digitalis and strophanthus are used great care must be exercised owing to the fragile vessel-walls. It may be well to warn against the ordinary diaphoretic cures also, for these, too, are not without attendant dangers. If the skin be stimulated by heat in any form cold should always be applied to the head. Gentle friction should always be used upon the surface of the body while the patient is in the warm full-bath. Much more could, doubtless, be said upon this subject but that which has been told may perhaps serve to draw your attention to this assuredly not uncommon condition, which has, curiously enough, been grossly slighted by nearly all of our best writers. That it is of vast importance to us as physicians, I think you will readily admit. By an early recognition of its peculiarities, I feel sure many a life can be rendered easy and prolonged, and by its proper treatment when once recognized very many deaths from apoplexy may be for years averted.

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THE USE OF ANTI-TOXINE IN THE TREATMENT OF DIPHTHERIA AND MEMBRANOUS CROUP WITH A COLLECTIVE REPORT OF ONE HUNDRED AND THIRTY-TWO CASES.

J. E. LARKINS, M. D., TERRE HAUTE.

As the title of this paper indicates, the subject-matter deals principally with an attempt at analysis of the reported cases.

Antitoxine in the treatment of diphtheria, being of comparatively recent introduction, personal experience of the general practitioner must necessarily be limited in its use, and in many instances no opportunity has as yet been afforded to observe its effects. Under such circumstances, it is from the experience of others that we must learn, and through collective investigation knowledge may be acquired by comparison.

The one hundred and thirty-two cases herein given, were reported by twenty-five physicians. The report is confined to Vigo county, and principally to the city of Terre Haute. It will be observed that more deaths occurred in '95 than in '94, presumably on account of the greater severity of the disease. The table represents only the rate per cent of deaths to the number reported and not to the actual number of cases, as physicians there seldom report more than one case in a family.

In presenting this subject to the society, I do so with the conviction that it will be of interest, and in the discussion and criticism which I hope to elicit, believe much valuable clinical information will be derived. No subject could be of more profound interest to the physician, than that of the cure of diphtheria, the very name of which produces panic in the household.

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In using the word cure, I refer to its literal meaning, and the absolute fact of its practical application. No discovery since the days of Jenner, when he listened to the story of the milkmaid, and placed the practical banishment of that dreadful scourge, small-pox, within the power of all civilized nations, has been of so great value to mankind.

In antitoxine, I believe we have a true specific for diphtheria. In theory, and probably in fact, it is based upon the principle of vaccination, viz: to render the human body immune to a virulent disease by introducing artificially in the system, a protective product developed through modification of its specific agent in foreign media After successful vaccination, a person may have varioloid, and thereafter, as rule, be immune to the contagion of small-pox. The immunity conferred by the antidiphtheritic serum in the healthy subject appears to be practically evanescent, but what subsequent effect in this line, a curative dose of antitoxine has upon the human body suffering from a fully developed diphtheritic case, has not as far as I am aware, been observed. If a person after vaccination, may have varioloid or modified small-pox, and then immunity, may not the same result obtain after immunization for diphtheria? So far as I am aware, a second attack of diphtheria has not been recorded as occurring in a patient cured of the first attack by antitoxine. It is an observation to which I desire to direct the attention of the profession. It is well known that one attack of diphtheria confers immunity for a time, and it may be that the introduction of antitoxine into the system in the developed stage of the disease, may so fortify the protective elements that the body will not again become susceptible to the contagion.

Of course, the length of time in which antitoxine has been used, is not sufficient for extended observation in this direction, but a second attack, or the conditions favorable to such, would be worthy of record.

The exact manner in which antitoxine cures diphtheria, does not seem to be definitely settled. According to the law of Behring material is developed in the blood which neutralizes the effects of the specific poison of the disease, and confers immunity to those in whom the serum of such blood is artificially introduced. The

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studies of Pfeiffer have, however, led him to the conclusion that substances are formed which destroy the infectious material and therefore eradicate the cause of the disease. It may be that cell action is so stimulated and the metabolic processes so changed that effectual resistance is offered, through the medium of the blood serum, to the further invasion of the system by the infectious material. This is probable, as experimenters have found that the supposed pathogenic micro-organisms may be cultivated in the blood-serum of animals immunized for the disease which they produce.

Moreover, antitoxins are held in solution in the blood, but do not pass through the coats of the vessels. The subject is one of such great interest and importance that to touch upon all its phases would be to write a volume, and in the short space allotted to a paper, only a beginning can be made. Besides, this is designed to narrate the observation of the general practitioner at the bed-side—that final clinical teacher in the great school, to whom all things in our art must be subjected in the crucible of experience.

During the year 1894, there were reported to the board of health at Terre Haute, Indiana, 233 cases diagnosed as diphtheria. Of this number, 102 were males and 131 females. There were 39 deaths recorded as due to the disease. During the same period 19 cases were reported to the secretary of the county board of health in the county outside of the city, of which number 9 were males and 10 females, with six deaths, making a total number of cases reported for the county 252, and the total number of deaths 45.

During the year 1895 there were reported for the city 182 cases of which number 79 were males and 103 females, with 23 deaths. the same period in the county outside of the city, 11 cases, of which 7 were males and 4 females, with 6 deaths, making the total number for the county 193 cases and 29 deaths. From September 1, 1894, to April 1, 1895, there were reported 197 cases, of which 92 were males and 105 females. Of this number, 20 were fatal—9 males and 11 females.

From September 1, 1895, to April 1, 1896, there were reported 150 cases, of which 62 were males and 88 females. In this period there were 21 deaths—12 males and 9 females.

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Prior to September 1, 1895, antitoxine had not been used, except in a few cases. Since that time it has been used by a majority of physicians in Terre Haute, and with a view of ascertaining as nearly as possible the exact number of cases treated with it, with results, etc., I sent out the annexed chart, marked exhibit "A", and find the total number to be 132, with 18 deaths, or 13.6 per cent.

Thus we have the following table for the years:

	No. of cases.	No. of deaths.	Mortality per cent
1894	252	45	17.8
1895	193	29	15
Sept. 1, 1894, to April 1, 1895.	197	20	10.1
Sept. 1, 1895, to April 1, 1896.	150	21	14

Number treated with antitoxine from September 1, 1895, to April 1, 1896—males 61, females 71. Total 132, number of deaths 18, mortality per cent, 13.6.

In the very great majority of cases only one injection was given to each patient, but in several it was repeated two or three times, and in two laryngeal cases, six injections were administered, the cases being desperate and one eventually recovering.

It would appear from recent experiences, and a study of the literature upon the subject, as it is also the opinion of several of the physicians in attendance, that some of the deaths herein reported might possibly have been avoided had the remedy been vigorously pushed to its full therapeutic effect.

It is the opinion of all observers that the earlier in an attack of diphtheria, antitoxine is used, the better the results and consequently the greater the chances of recovery, and in an analysis of this collection of cases the statement is abundantly verified. In the one hundred and thirty-two cases, only one death is reported where the remedy was used within the first forty eight hours of the disease, and in reporting this case, the physician states, there is doubt about the length of time the child had been sick before he was called. One physician reports a series of fifteen and another ten cases without a death, three of the latter being laryngeal, and a glance at their reports show that in nearly all, the remedy was used on the first day, in four or five on the second day and in only three on the third day.

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In one case of another physician it is reported used on the thirteenth day, but upon inquiry the physician states the child had tonsillar diphtheria, from which it had apparantly recovered, but subsequently extended to the larynx for which latter involvement anti-toxine was used with a favorable result.

According to the reports read, the death rate increases *pari-passu* with the length of time the disease had run before the remedy was used. In the seventeen of the one hundred and thirty two cases, in which I used antitoxine, the result was favorable, except in two of the three cases where it was administered on the fourth day of the disease. These two proved fatal on the fifth day of the disease in twelve and eighteen hours after the injection, from sepsis consequent upon extension to the nares and laryngeal obstruction from extension to the larynx. I advised the use of antitoxine when I first saw the children on the second day of the disease, but the parents insisted on waiting with the hope that they would recover without the use of it, but with the danger of delay fully explained to them. I was and am still of the opinion that the children would have recovered had consent been obtained to use the antitoxine when I first saw them. On the fourth day of the disease when it became apparent to every one that the children were sinking request was made to have the antitoxine administered, but it was then my opinion clearly expressed to the parents, and concurred in by the consulting physician, that nothing would avail, as the little sufferers were beyond hope of recovery. Reference to these cases will be made later.

In this collection of cases, the ages ranged from two months to seventeen years, but the great majority were from three to eight years of age.

Membranous croup is here classed separately from diphtheria, on account of the uncertain relation of the two diseases. There were eight cases of croup reported, with two deaths, neither trachaeotomy nor intubation being performed in any of them. These were reported as idiopathic or true croup—croup commencing in the larynx, in contradiction to secondary croup, or diphtheritic laryngitis, due to extension of the diphtheritic process from the fauces. Of the latter class, twenty cases are given, with five deaths. In two of these the nasal and post-nasal cavities were extensively involved

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also, and is difficult to tell which contributed most to a fatal termination—sepsis or laryngeal obsruction. In the above twenty cases, intubation was performed seven times, with three deaths. No case of trachaeotomy was reported.

In eighteen cases, the disease extended to the nares, eight of which died. In two of the latter, the same remark will apply as in the above, with reference to the larynx.

The time of death in reference to the injection, was within the succeeding twenty-four hours in all but four. Two of these are given as the second day and two in two and eight weeks respectively. The last two cases were evidently due to some secondary effect of the disease.

The time of death in reference to the day of disease (except in the last two cases above mentioned) is given from the fourth to the eighth day. This taken in connection with the time in which death occurred after using the injection, clearly shows that the remedy was not used until after systemic infection had taken place, or laryngeal obstruction had so prostrated the system that the therapeutic effect of the anti-toxine could not be obtained. Then too, as above stated, the remedy may not have been used as vigorously as it should have been, in some cases at least.

There were reported, twenty cases in which immunizing injections were given with no development of the disease in any of them. and no unfavorable symptoms or effects were observed to follow.

In only two of the one hundred and thirty-two cases is the disease reported to have spread after the injection was used. In one case of diphtheria, the nervous symptoms in a choreaic patient, twelve years of age, appeared to be aggravated.

In this series, six had post-diphtheritic paralysis. One had otorrhoea. In one case the paralysis effected the lower limbs and in another case the whole voluntary muscular system, except the head.

Aphonia and paralysis of the muscles of the right side of head and neck in one. All recovered. The remainder of the paper is devoted to the history of illustrative cases.

It would be unnecessary to give a detailed account of all my cases and I will only give the history of a few illustrative ones.

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On the morning of November 8, 1896, I was called to see Frank M., age seven years, and upon arrival found him recovering from a severe convulsion. The history obtained, was that of some error of diet on the previous day and they thought he had had a light chill a few hours before the spasm. As convulsions were easily provoked in the child from slight causes, there seemed to be no special reason for alarm, but his general condition impressed me that he was suffering from some grave disease, and I so informed the parents. Diphtheria was then prevailing in the city and especially in that part and several cases had developed in children attending the same parochial school in the neighborhood. Pulse 110, feeble; temperature 101 and he had vomited once during the morning. The throat was not examined on account of his general nervous condition.

I prescribed calomel, quinine and bromides, hot mustard, foot-bath and hot cloths to the head and over the stomach. In about an hour and a half, I was hurriedly sent for, as the child had another convulsion. I increased the bromides and ordered a general hot pack in blankets. He soon came out of the spasm and had no more during his sickness. I advised isolation, as I thought it might be diphtheria. Calomel 1-4 gr. every hour; qui. 2 1-2 gr. every three hours and bromides as necessary, were given during the afternoon and night, followed by castor oil the next morning.

Saturday, November 9, 9:00 a. m., temperature 100 1-2, pulse 112, complains of nausea and looks very weak. Examination of the throat shows the whole fauces to be deeply congested, tonsils swollen and a gray deposit on each about the size of a split pea. Diagnosis of diphtheria were made. Quinine was continued; Merc. Bichlor. 1-16 gr. in Zi. Elix Pepsin and Bis. every two hours and teaspoonful of whisky every two hours, were given. Local applications of Loefflers Sol. were made every four hours, and spray of Peroxide of Hydrogen 50 per cent. with saturated Sol. Pot. Chlor. every two hours. 4:00 p. m. the membrane has covered both tonsils and the uvula and the child has had nasal hemorrhage. Treatment continued.

Sunday, November 10, 9:00 a. m., temperature 100, pulse 115. Throat emits a very foetid odor and there is a thin acrid nasal discharge. The whole fauces is completely covered by a thick leathery

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grayish-white membrane. The membrane is visible in the anterior nares and the child has a course croupy cough. I explained to the parents the serious and probably fatal condition of the child and advised that antitoxine be immediately given. To this the mother dissented and said we would wait until to-morrow. The child's condition continued to grow worse and by morning of 11, laryngeal obstruction was added to the faucial and nasal involvement. A more serious condition could not be depicted, and my opinion was, that the case was hopeless. They now consented to the use of antitoxine and I gave the child a full dose of the Behring No. 2. The consulting physician concurred in the prognosis. I had not used antitoxine then, but a few times. Now I would give the No. 3, and repeat in six or eight hours, in such a case. The laryngeal obstruction continued to grow worse during the day and I did not expect the child to live during the night. In about six hours after giving the injection the child seemed much worse, but rallied some toward evening. About 8:30 p. m., I was sent for hurriedly, as the child was thought to be dying. A severe attack of dyspnoea came on and the mother laid him on the lounge, thinking he was dead. When I arrived, he had rallied and was breathing better and improvement was continuous and rapid. I considered the sudden increase of dyspnoea the night before, to be due to loosening of large portions of membrane and thus producing complete obstruction of the larynx. I now omitted the mercury and gave small and frequently repeated doses of Lr. Chlor Iron.

During the whole sickness an effort was made to keep the nose and throat as clear as possible, of septic matter, by the use of syringe and spray. The appetite was irregular and proper feeding was attended with difficulty. As in all cases of laryngeal involvement, aphonia remained several weeks after recovery.

I have thus given at length, the history of this case in order to show by comparison the probable result of antitoxine. About two weeks after my last visit to this patient, I was called to see two other children in the same family, one aged five years, and one eleven months.

The course of the disease was exactly the same, with the exception of the initial convulsions. I advised the immediate use of anti-

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toxine, but to my utter astonishment, the mother particularly, strenuously objected. I could not then conceive, that with such practical demonstration of the efficacy of the remedy in the other child, why objection should be made to its use in these two.

The children continued to grow rapidly worse, until the afternoon of the fourth day of the disease and all hope of recovery abandoned, when request was made to have the anti-toxine administered. My opinion expressed to the parents and concurred in by the consulting physician, was that nothing would do any good, as the children were practically dying. Behring No. 2 was given, but both died in twelve and eighteen hours.

It may be said that if antitoxine saved the first, it should have saved the other two. The inference is not justified, as the latter were profoundly septic, in addition to having laryngeal obstruction. The argument is this, as I see it is, not that it saved one, but if used not latter than the second day it would probably have saved all of them. Subsequent experience in the use of the remedy confirms my belief in this statement.

I afterward learned that some meddlesome Nancy in the neighborhood, said the boy's voice was destroyed by the remedy and upon this statement, objection was made to its use in the other two, until too late for anything to do good.

I will only relate one other case of diphtheria and that in a girl, aged eight years, who had enlarged tonsils and almost complete nasal obstruction from adenoid growths in the post-nasal cavities. The initial chill, followed by vomiting occurred in the evening and I was called the next morning. Upon examination, I found a typical case of diphtheria, the membrane covering the tonsils and crawling up the edges of the palate. The characteristic acrid nasal discharge was present, showing extension to that cavity. The breath had a very foetid odor and her general condition showed profound infection. A full dose of Behring No. 3 was immediately given and a No. 2 given the next morning. We could do nothing scarcely, with sprays and washes and no effort was made at local application. She immediately began to improve and the recovery was uneventful.

In this case, the use of medicines and the difficulty of applying them, made it one in which I believe no good would have been

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accomplished. I attribute her recovery entirely to the antitoxin. Arrangements have been made to remove the tonsils and adenoid growths when she was taken with diphtheria.

A marked feature in this case, was the very great reduction in the size of the tonsils after recovery. An older brother of this girl had diphtheria in November, 1895, to whom two injections of Behring No. 2 were given and his general health has been better since then than ever before. Previous to this sickness, he was subject to frequent attacks of a distressing sick-headache, but now seems entirely free from it.

The effect apparently, of antitoxine in another case, was in that of a delicate, nervous girl, five years of age, to whom two injections of Behring No. 2 were given. In this child, whom the mother said had never been well, choreic movements had been frequently noticed and nystagmus was almost constantly present, especially when the child was all excited. Since recovery, both have disappeared and so far as can be judged, she is perfectly well.

Diarrhoea did not follow the use of antitoxine in any of my cases, but constipation was of such frequent occurrence that I am led to suspect some causative relation.

In the treatment of membranous croup with antitoxine, I have only one case to relate. I was called one evening in November, 1895, to see a girl aged five years. A glance at the patient was sufficient to determine the nature of the trouble, and I informed the mother of the serious and probably fatal illness of the child. I prescribed the usual remedies and advised that antitoxine be used. To this, consent was given. I could not well procure the remedy that night, but next morning in company with another physician, a doubting Thomas, injected a full dose of Behring No. 3. By this time we had a fully developed typical case of the disease.

The consulting physician said we had just as well give this as anything, as the child would die no matter what was done. In twelve hours, another full dose of Behring No. 2 was given. The child rested pretty well that night and next morning was better. There was considerable dyspnoea for a couple of days, but the child recovered without further treatment, except some simple cough mixture and stimulants of quinine and whisky.

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In all cases, except two in which I used antitoxine, I called another physician to see the case that it might not be said I used it where no diphtheria existed.

Reliance was placed in all cases upon the clinical picture of the disease for diagnosis. This is partly in accord with the recommendations of the board of health of New York, St. Louis, Chicago and other cities, as they advise the use of antitoxine in suspicious cases, and especially in those where the physician is satisfied diphtheria exists, and not wait for a bacteriological examination, as that can be made later. To wait for such an examination, valuable time would be lost, besides in the present state of our knowledge, I believe it preferable. It is in the early use of antitoxine that its specific effect can be obtained, by destruction of or counteracting the effects of the infecting material.

The so-called Klebs-Loeffler bacillus develops upon the false membrane and in most instances accompanies the local manifestations of the disease.

The streptococcus, said to be the most virulent of the supposed pathogenic micro-organisms, develops beneath the membrane, is a late product of diseased action, and is found in cases termed mixed infection. They are found, the same as the Klebs-Loeffler bacillus, in the throats of healthy persons and even in the substance of the tonsils.

As to the medical treatment of these cases, it has generally been claimed that it in no wise interfered with the use of antitoxine. My observation has led me to believe that large doses of Bichlor. Merc., in some degree at least, counteract the effect of the antitoxine. Lately, I have confined myself to the use of small and frequently repeated doses of Tr. Chlor. Iron, and the moderate use of quinine and whisky. As to the local treatment of the disease, the free use of warm salt water or listerine properly diluted, for the purpose of keeping the parts clean, appears to me to answer every purpose.

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THE THERAPEUTICS OF TYPHOID FEVER.

J. A. GOLDSBERRY, M. D., BLOOMINGDALE.

The researches of Eberth, Klebs and others have established beyond reasonable doubt the fact that typhoid fever is dependent upon a specific germ, and that its presence within the human organism is absolutely necessary to the production of the disease. This, with here and there an exception, is the accepted belief of the profession generally. The disease is largely a preventable one and whatever may be the nature of the infecting agent, the wise and humane physician, if living in a community where the malady prevails, with patients under his care, will see to it that such restrictive measures be used as will confine the poison within the narrowest possible limits and at the earliest moment, destroy as far as may be, its power for harm. To this end, inasmuch as there seems to be no doubt that in the feces alone resides the contagious element, that here, and nowhere else, are we to look for the primary cause, when called to a case of the disease, if the development of additional cases be prevented and the further spread of the poison intercepted, the physician should regard it as one of his first duties, to neglect which there can be no excuse, to give to the attendants clear and definite directions as to the proper disposal of the dejections. For many years I have lived in a community where typhoid fever has been one of the prevailing diseases. During this period I have treated perhaps my share of cases. It has long been my rule when called for the first time to one sick with the disease, before leaving the house to call the attention of the nurse to the importance of the timely and thorough disinfection of the patient's stools. In a matter of such vital importance, and upon a due recognition of which so much depends, there should be no half-way measure. The medical

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attendant is not infrequently sadly derelict in his duty in this regard. I have known an otherwise bright and intelligent physician to treat case after case and persistently ignore the first principles of prophylaxis;such negligence is not only inexcusable but borders on the criminal.

The typhoid bacilli outside of the body possess a surprising tenacity of life, and were the published statements regarding their power to resist heat and cold and some of the more powerful germicidal agents less trustworthy, many would regard them as untrue. They will live and thrive many months, and, under favorable conditions, possibly years, in the soil; will retain their vitality in water indefinitely; will survive many hours in a five per cent. solution of carbolic acid: will refuse for awhile to succumb to boiling water, and though frozen and imbedded in ice for many months will continue to live. Of the germicides my preference is the bi-chloride of mercury; of this, one drachm should be dissolved in a gallon of hot water. It is more convenient to keep the solution in a common stone jug, which may stand under or near the patient's bed. Immediately after a dejection a sufficient amount of the solution should be poured into the bed-pan to thoroughly saturate the feces; when practicable the vessel should be taken some distance from the dwelling, a trench dug and the contents buried, otherwise thrown into the water closet. The patient's anus and nates should be thoroughly cleansed with soft paper or a dampened cloth, which should be immediately burned, after which the parts should be bathed with the bichloride solution. The bed and body linen should be carefully examined from time to time, and if found soiled immediately removed and boiled for two or three hours. The bed-pan after each stool, should be washed with hot water, and then thoroughly flushed with the bichloride. In every instance the source of infection should be sought for. If the water used for drinking and culinary purposes is suspected, it should be sterilized by boiling.

Given a due regard to the importance of the hygienic and dietetic features in the treatment of typhoid fever, in the vast majority of instances, medication would be wholly unnecessary. There is little doubt that the tendency of the profession in the past, was to over-medication. Many a case of typhoid fever, at first mild, and

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promising to continue so, by the inordinate and injudicious use of drugs, has been converted into a serious one, recovering after a prolonged illness, reaching perhaps far beyond the average duration of the disease. The patient should occupy, when it can be so, a large, well ventilated and well lighted room, maintained at a temperature of 65 to 70 degrees, and so situated, if possible, that it will admit the sunlight at all hours of the day. Should the weather be cool, an open fire is preferable. After the first two or three days of his illness he should not be permitted to leave his bed for any purpose; from this time until returning convalescence, the urinal and bed pan should be used in the recumbent posture. Both bodily and mental exercise should be interdicted, and nothing calculated to excite or disturb, particularly matters of a business nature, should be permitted to engage his attention. It should not be forgotten that under the most favorable circumstances the patient will be sick a month, possibly much longer, and no pains should be spared to make the apartment in which he is to spend many weary days, as pleasant and cheerful as possible. The frequent and repeated visits of friends and neighbors to the sick room, as is the custom in some communities, are liberties which should not be allowed. No one suffering with typhoid fever is in a conditon to entertain or be entertained; what he desires and what he requires is to be let alone; to this end it should be a rule of the medical attendant to exclude all unnecessary company until the patient is well on the way to recovery. One of the crying necessities of the sick chamber is an efficient nurse. There are nurses and nurses. The one who holds this relation should be intelligent, experienced, cleanly and truthful. In a severe case of the disease, nothing can be more discouraging to the physician or trying to his patience, and nothing more unfortunate for the patient, than the services of an ignorant and slovenly nurse.

The profession is pretty well agreed as to the character and different forms of food which should be given in the management of a case of typhoid fever. By common consent at the head of the list stands sweet milk; of this, which should be skimmed, three or four pints may be given to an adult during a period of twenty-four hours. It should, as a rule, be administered in a given quanity, and at stated

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intervals, generally every two to three hours. When it is not borne well by the stomach, a rare circumstance, it may be diluted with water or lime-water. In exceptional cases peptonized milk does well, but many object to its taste and hence use it with reluctance. When, from the character of the stools, there are evidence of faulty digestion of the milk, the amount may be lessened and one of the animal broths, or what is preferable in some cases, beef juice, given alternately with the milk. If relished and desired, a cup of hot coffee or tea may now and then be given. The meat essences, teas and broths so much employed as foods in these cases, and which so few relish, may be rendered much more acceptable to the palate by adding to them the expressed juice of one of the vegetables, such as cellery, carrot, parsnip, etc. As a drink nothing can supply the place of pure, cold water, which, for obvious reasons, should be given freely and frequently throughout the entire course of the pyrexia. I do not think solid food should be permitted under any circumstances until from five to seven days after the establishment of convalescence. I have a vivid recollection of the case of a middle aged man, farmer, who had just emerged from a severe and prolonged attack of typhoid fever; he had been free from fever for ten days; strength and appetite were rapidly returning, and a complete restoration to health seemed near at hand. Five days after the case was dismissed, he ate a hearty meal of boiled beans and salt pork. A few hours later he was seized with an intense pain in the abdomen, general peritonitis speedily supervened, followed by collapse and death. While there was no autopsy in the case, the symptoms of intestinal perforation were so pronounced as to leave scarcely a doubt as to the cause of death.

In the medical treatment of typhoid fever, the profession is not quite agreed as to the method which promises the best results. The treatment should begin early in the attack; by the close of the first week the physician should have his patient well in hand. Whatever may be said for or against the cold-water treatment, so widely employed in Germany, if the published statistics of those who are in a position to know, are correct, this system of managing the disease promises more favorable results than any other method as yet known to the profession. To Brand, of Stetten, Germany, more perhaps

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than to anyone else, is due the distinction of first introducing to the profession the cold-water plan in typhpid fever; if not its pioneer, certainly it was he who first systematized this method and carried it out with a skill and elaborateness worthy of all praise. But when he positively insists that every case coming under treatment before the fifth day, if treated according to his directions, will get well, he is certain to meet with doubters. In 1887, in a series of articles which appeared in a medical periodical, the title of which I cannot now recall, he gives the tabulated statistics of over twelve hundred cases with only twelve deaths, a mortality of one per cent., and declares that of the twelve fatal cases, not one received treatment until after the fifth day. As he claims that all cases treated according to the Brand method before the fifth day will recover, then it follows that had the twelve fatal cases come under treatment prior to that particular period in the disease, in the more than twelve hundred cases there would not have been a single death! a result without precedent in the history of medicine. Statistics, medical as well as those relating to other matters, are often misleading; misleading because they are not sustained by facts, and are therefore untrue. I do not believe that any one physician, or any number of physicians, by the Brand method or any other method, ever treated, or ever will treat twelve hundred unselected cases of typhoid fever without a single fatality. Every intelligent physician of experience knows, that now and then a case of disease occurs which is necesarily fatal and that the combined skill and wisdom of the medical world could not avert the fatal isue. While I distrust the correctness of the Brand statistics, I have faith in his method of treatment, and believe that in some cases this plan will save life where the expectant method would fail. Inasmuch, as a rule, the principal danger is from the direct or indirect effects of the prolonged high temperature, one of the first indications is to lower the fever. As already observed, the measure chiefly relied upon for this purpose by a large proportion of the profession of Germany, is the rigid system of hydrotheraphy, introduced, practiced, and enthusiastically recommended by their distinguished countrymen. As all are familiar with the Brand technique, reference to its details here is unnecessary. When rigidly practiced the treatment seems severe,

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and it is; all will admit that it is frigid, and it is doubtless largely due to the fact of its seeming cruelty by the laity, that its employment by the profession has not become more general. The only contra-indications, as claimed by some, are intestinal hemorrhage and peritonitis. It would seem that its application would be hazardous in the very young, the old and feeble, "or those suffering from organic disease of heart or lungs." Brand makes no distinction, but applies it in every case whose rectal temperature reaches a certain mark. The profession of the United States seem slow to fall in with the Bland method; recently it has been introduced by Doctors Miller and Wilson, of Philadelphia, in the German and Episcopal hospitals of that city, and Doctor Baruch, of New York, has urged its adoption in the large hospitals throughout the country, but comparatively few of the profession of the smaller towns and the rural districts have as yet become its practical advocates. In private practice, as a rule, the plan is impracticable, in a great measure, as already observed, because of the objection of friends and the prevailing popular prejudice, and for the additional reason that the physician frequently finds it impossible to secure when needed the necessary trained servants. As a substitute for, or in preference to, the cold bath treatment, many physicians employ one or more of certain anti-pyretic drugs. It has been my practice for a number of years, in cases where the hyper pyrexia was threatening, the patient young and robust, to administer quinine in anti-pyretic doses. The drug should be given early in the disease, in doses ranging from twenty to forty-five grains. The whole amount given, though practically a single dose, may be divided into portions of seven to eight and one-half grains, each portion given at intervals of from eight to ten minutes. Its maximum effect occurs in from eight to twelve hours. In order that the full effect of the drug may correspond with the normal morning remission, it should be given in the evening. As a rule these large doses are not required oftener than every second day. In the majority of instances the effect of quinine thus employed, is all that could be desired. The temperature falls 4 to 5 degrees (fah.) and not infrequently to the normal mark, the pulse diminishes in frequency, the nervous symptoms subside, the skin becomes moist, and often the patient

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passes into a restful and refreshing sleep, for which he and the doctor feel thankful. As is well known, this is essentially the plan of Liebermeister, the noted German physician and teacher, who was largely the first to direct the attention of the profession to the value of quinine as an anti-pyretic in typhoid fever. I not infrequently, in cases of unusual severity, where the temperature is high and the nervous symptoms prominent, supplement the quinine by the wet-pack, giving this latter, if indicated, three to four times in twenty-four hours. In the vast majority of instances a vigorous anti-pyretic treatment is not required. In a case of moderate severity, it is my custom where the temperature under the tongue reaches 103 degrees (fah.) to direct that the patient be thoroughly sponged with tepid or cold water, and repeated, if necessary, every two or three hours. The happy effect following the proper administration of the sponge bath is often surprising, so much so, that the physician feels like concluding that this particular method of abstracting heat should supersede all others.

As regards the value of antiseptic medication in this disease, opinions differ. Theoretically it is indicated. One or more of the preparations of mercury, carbolic acid, iodine, thymol, naphthalin, and other drugs, have each their advocates as intestinal antiseptics. In the beginning of treatment, as a rule, the bowels should be cleared by a purgative dose of calomel; a second dose is not often required. I have in a number of instances given carbolic acid without apparent effect. Thymol, so highly lauded by some, I have employed faithfully in many cases with negative results. In every case of typhoid fever the digestive apparatus is always more or less, and not infrequently, seriously impaired; the gastric juice is faulty in quality and quantity. Largely, as much as may be, to correct this defect I have for many years throughout the whole course of the disease, prescribed one of the mineral acids, preferably hydrochloric. When the tympany is pronounced, a tendency to diarrhoea with dry tongue, I have found turpentine to act well in many cases. Whatever may be said against the employment of turpentine in this disease, an extended experience with it in the class of cases referred to, convinces me that it is a valuable agent. When the meteorism is excessive, turpentine stupes are useful and should

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always be tried. Diarrhoea, if the stools are too frequent, may be controlled by scruple to half-drachm doses of bismuth, combined with opium. Salicylate of bismuth, in five to eight grains, given every three or four hours, in some cases works well.

Progressive heart failure, a condition so much to be dreaded, is best guarded against by the timely administration of alcholic stimulants. While in many cases stimulants are not required, at any stage of the attack, in others their use should begin early and continue uninterruptedly until the establishment of convalescence. When exhaustion to any considerable degree exists, nervous symptoms prominent, with a diminished systolic heart-sound, stimulants are always indicated, and, in many cases, should be given with a lavish hand. Strychnine here is also a valuable agent. I have employed it in many cases in doses of one-thirtieth to the one-twentieth of a grain, and often with flattering results. Digitalis, which has long been regarded as the prince of cardiac tonics, I seldom prescribe in the treatment of typhoid fever, particularly in the advanced stages of severe and protracted cases. Its employment here, I am sure from past observation, is not infrequently productive of harm. Intestinal hemorrhage, which is a serious complication, and occasionally is the immediate cause of death, is, as a rule, best combatted with ergotin hypodermically administered, advantageously supplemented in many cases with full doses of acetate of lead and opium. At the same time ice-cold compresses, or a rubber bag filled with ice, should be applied to the abdomen. Absolute rest should be enjoined and the food wholly liquid until the danger is past. The bowels should be confined from three to five days, when they should be moved by an enema of warm water.

Our prognosis in any case of typhoid fever, however unfavorable the prospect, should always be guarded. I have in so many instances failed in my prediction as to the final outcome, that I have long since, while the patient continues to live, ceased to abandon all hopes of his ultimate recovery. It is astonishing, and sometimes surpasses belief, to see how near to death's door one may be brought with this disease and yet live and get well. I have in mind a boy, of whose case I preserved a few notes, fourteen years old, son of a farmer, stricken with what seemed for a long period must necessar-

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ily be a fatal attack. For three consecutive days, commencing on the fourth day of his illness, the temperature in the evening reached 107 degrees (fah.) From the seventh to the twelfth days inclusive, when uninfluenced by antipyretic treatment, the temperature ranged from one hundred four and three-fifths degrees (fah.) in the morning to one hundred and six in the evening; beginning on the third day of the attack and lasting until the middle of the second week, there was active and violent delirium. He was at times so boisterous that his cries could be heard a hundred yards or more away, would frequently attempt to leave his bed, to prevent which, forcible restraint was necessary. There was persistent sleeplessness, which partially yielded to large and frequently repeated doses of morphine given hypodermically.

Near the close of the third week the fever had become remittant, the temperature on the morning of the twentieth day marking 103 degrees (fah.), but the evening exacerbations were still high. From this time there was a daily progressive fall in the fever; at the close of the fourth week it had become distinctly intermittent, the temperature on the morning of the thirtieth day falling below the normal mark. The patient it seemed, had now reached the limit of his powers of physical endurance, but at this juncture an unexpected sequel supervened. Blood, in large quantity, was noticed in the urine; the stomach became irritable, and almost everything swallowed was rejected, mixed with dark-colored blood. There was hemorrhage from the nose, from the lips, gums and fauces, and from the inner surface of the eyelids. A purpuric eruption appeared on the trunk and extremities; the spots were more numerous than I had ever before observed in any case, some of the largest ones, which were an inch in diameter, were also the seat of considerable hemorrhages. Bleeding from the various internal and external mucus membranes continued, with brief periods of remission, for five or six days, when it gradually ceased. The patient was now profoundly anemic and well-nigh exsanguinated. At length, after hovering between life and death for many days, having lost all semblance of his former self, convalescence set in, the boy came slowly back to life, and ultimately made a perfect recovery.

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OSCILLATIONS IN, AND EVOLUTION OF THE PRESENT TREATMENT OF TYPHOID FEVER.

O. A. REA, M. D., MARMONT.

Non-intermitting, or continual and intermitting fevers, were about the only specific distinctions in the names of acute fevers from the time of the earliest writers to a comparatively late date.

Hippocrates, in Aphorism XXXVI, sec. 4, says: "Sweats in fevers are beneficial if they begin on the third, fifth, seventh, eleventh, fourteenth, seventeenth, twenty-first, twenty-seventh, thirtieth or thirty-fourth days, for those sweats determine the disease; but those which happen otherwise signify a troublesome and lingering disease and relapses." This extract indicates the existence of typhoid fever, in that remote age, 400 years B. C. C. F. Sprengell, M. D., an authority writing at London, A. D., 1708, sustains the same authority, but explains more fully the reason of this phenomenon as follows: "For these are critical days, and such sweats happening on these days, bring the disease to a dissolution, but if such sweats should follow before the matter is concocted, then they will but lengthen the disease." Although the diagnosis of disease was not much advanced at that time, the materia medica had been enriched by a valuable discovery, for Doctor Sprengell says in the same paragraph: "But in intermitting fevers we need not be so observant, considering our Cortex Peruvianus, if rightly made use of does cure them infallibly. Probably, Hippocrates did not use the cold-water bath, as he says, in Alphorism XLVIII, sec. 4. In non-intermitting fevers, if the patients are outwardly cold, but burn within and are very thirsty, it is mortal."

Celsus, 400 years after the above statement, advocates the method so lately advanced by Drs. Luton, of Rheims, 1880, and Hun, of

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Albany, 1885. In his sentence or Aphorism XXIX, he says, "when the disease has increased to its height so it be not before the fourth day, if the patient has suffered great thirst let him drink a large quantity of cold water, and even more than his stomach will bear, and when his belly is thus, beyond measure, filled and refrigerated sufficiently, then let him vomit. Some, indeed, do not require vomiting, but use the water itself in this plenty for a medicine. When either of these is done the patient must be well covered with clothes and set to sleep, for generally after so much thirst, watching and fullness, and after breaking of the febrile heat, the patient will fall into a deep sleep, during which he will sweat abundantly, and that is the most expedite remedy." About 1700 years after Celsus, there had been some choice in the application of the remedy, and also a more explicit explanation as to results. C. F. Sprengell, 1708, referring to the above authority, says: "This ought to be done on the fourth or fifth day; the febrile matter is brought to a concoction in that time, and may be easily extruded by invigorating the natural motion in this manner, and that sooner than it would be otherwise. But the cold bath performs the same effect, yet this method is more convenient." How many changes in this regard had occurred from the time of Celsus to 1708, it is impossible to estimate. Between these periods had existed the dark ages, and probably all diseases had been treated by the charms and incantations of a superstitious age, a form of practice now revived in the name of Faith Cure, Christian Science, etc., etc. Investigation shows no great improvement in the treatment of continued fevers during all these ages. Physicians, who do not rely on medicines even to moderate the severity of the disease, may refer to authority as old as the above Celsus quotes, Asclepiades, who says: "The use of medicine was, in a great measure rejected by him, and that not without good reason, since almost all are offensive to the stomach, and are of an evil juice, so that he employs his whole cure in regulating the diet." His patients were not even punished by the thirtieth dilution, nor were their olfacatories offended by a molecule of pus from an unhealthy ulcer, nor yet by dead glandular tissue. Phlebotomy has no place in the modern therapeutics of continued fever, although Professor Frederick Henry in "Hare's

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System of Therapeutics" 1892, gives that method a token of approval by compiling the statement of Leroy (de Bethune) 1852, who bled every case during the first week of the disease, and with great supposed success. Even old Celsus never bled after the second or third day of the disease, and Sprengell, 1708, says: "Not that bleeding is not performed with success after the fourth day, for constitutions are not alike, though it should not be done after the fourth day if it can possibly be done sooner." Watson, 1838, advises great care in typhoid fever and does not recommend that procedure in all cases as does Leroy, 1852.

Thomas Watson, M. D., in his lectures delivered at King's college, London, 1836-7, sums up as the best treatment known to him at that time: "Cold to the shaven head, the local abstraction of blood, wherever there happens to arise local inflammation; an active purge at first and mild laxatives afterward, if the bowels are confined or sluggish; moderate astringents if there is much urgent diarrhoea, a few grains of Dover powder or small doses of catechu. Opium in more efficient doses when the nervous symptoms are prominent, particularly in nervous delirium and sleeplessness, and in certain cases, small and repeated doses of mercury, and in certain cases early support by animal broths and even by wine.' Boerhuave, at about the same date, professes that he knows nothing which can fitly be termed a remedy. Watson also opposes the affusion of cold water, but recommends sponging with tepid water. Watson also refers to a Dr. Williams as holding that enemata of warm water and syrup of poppies, will do all that can be done beneficially. For some time he had only lost one patient of sixty-three thus treated.

Turpentine, internally administered, was highly recommended by Prof. Geo. B. Wood, and has proven a valuable remedy, especially when the tongue is dry, heavily coated or fissured, and the abdomen tympanitic. Flint advocated the use of mineral acids for the supposed chemical effect of neutralizing the super alkaline property of the circulating fluids of the body.

Necessity of the support of the patient by nourishment begun, also, to be more fully realized and provided for. Milk, containing all the elements necessary to sustain life, was thought by these

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writers, to be far preferable to thin soups, and "beef tea" went into deserved oblivion. Assisting nature through the long ordeal of a continued fever by a proper diet was an innovation. Hippocrates mentions milk only to warn against its use. Celsus says, "Milk is a poison in pains of the head and in acute fevers." Sprengell explains that "it is apt to rarify the wind in the belly." Watson goes no further than "animal broth." Starchy foods have been several times recommended, especially at convalescence.

Cullen again brought the cold water treatment into use, as hinted at in the writings of the older authorities. Brandt, 1860 to 1870, perfected this plan, and Liebermeister, in his masterly way, made it more popular. Instead of the cold bath or supplemental thereto as antipyretic, large doses of quinine, were recommended by Liebermeister and others. Either in one large dose or in smaller divided doses administered in rapid succession. Then followed the cold tar products and salicylic acid, and these, while depressing the temperature, also depressed the patient, without shortening the course of the disease in the least.

Alchohol in some form has been extolled through all the ages, by some writers as a nourishment as well as a stimulant and tonic. Several excellent physicians yet regard it as the sheet anchor, some from the commencement of the disease, others after the first week or ten days, prescribing it as regularly and as strictly as other medicine or nourishment. Others, and I think correctly, regard it as an anaesthetic and a depresso-motor, and that after a time, by its regular use, the nervous system becomes weakened, and thus restlessness and delirium is increased, the heart's action becomes irritable, and my observation leads me to the conclusion that the disease is not the least shortened by its use, while the patient is left in a weaker condition and convalescence is greatly protracted. Its tonic reputation seems to be a myth, and tonics and stimulants of a more reliable character are proper to administer, especially when the depressing after effects of alchohol are considered. The same may be said in regard to nourishment while its anesthetic and depresso-motor influence can be provided in a much more accurate and reasonable manner.

Bacilli and the ptomaines are the discoveries that proclaim a new

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era in the evolution of the present treatment of typhoid fever. Selmi discovered, in 1870, in the body of a man supposed to have been poisoned, a substance chemically identical with the vegetable alkaloids, but which has since been found to have an independent reaction when united in solution with cyanide of potassium and perchloride of iron.

Klebs and Eberth afterwards, 1878 to 1881, and others, claimed the discovery of a specific organized germ, only connected with typhoid fever. Whether the ptomaines furnish the nidus and only nourishment upon which the germs may multiply and become active pathological factors, or these ptomaines are formed by the excrement and decaying remains of the organized bodies, seems immaterial as to the application of remedies, for in the one case antiseptics destroy the germs and stimulated tissue rids itself of its detritus, and in the other these same remedies have an alterative action, and stimulated nature rids herself of both the germ and the ptomaines.

Intestinal antiseptics have been the result of these latter discoveries.

Through all the years from Hippocrates, there has not been such a radical change in the treatment of fevers, as the last score of years has witnessed.

Turpentine, the mineral acids and also calomel, had been used, and good clinical results noted, but without the true theory of their germicide effect, and consequently with not the same systematic administration.

Clinical experience will yet have to determine which is the best and safest of this class of remedies, as well as the necessary interval of their administration, to produce the desired results.

Previous to 1884, I had seen but very few cases of typhoid fever, but in the two succeeding years, thirty patients came under my care, in whom the symptoms were well marked.

The fever, and attendant nervous and digestive symptoms had the typical gradual diurnal increase to the maximum, then after eight to twelve days, with only the morning and evening variations, the symptoms gradually declined to the morning normal, then to the constant normal.

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This was the day, or era, of antipyretic doses of quinine, when the temperature began to range above 104 degrees. Liebermeister's rule was followed with the same general results he has recorded.

In some of these patients the amount had to be increased, even above the maximum dose; one in particular to whom it was necessary to give sixty grains in one evening before an appreciable result was attained. These seemingly large doses would rarely produce cinchonism, and never serious results.

Under this powerful influence the patient rested better, and all the active vital processes were more nearly corresponding to health. The temperature could be reduced in this manner about two degrees as compared with the same before the antipyretic was given. After from twenty-four to thirty-six hours the impression thus made would cease. Sponging with tepid or cold water, the following evening, would again reduce the fever about one degree, and after forty-eight to seventy-two hours the quinine was again administered as before. In the meantime the usual treatment of the time was given, for special indications. About one-fourth of this series of cases had hemorrhages from the intestines. One of this number died. This patient was a female at about the fifth month of pregnancy; had a miscarriage and a severe uterine hemorrhage.

One had a relapse after the fever had declined to normal, by reason of eating too much, but finally recovered, and one case developed a phlegmasia dolens, that left a permanent disability.

Since the summer of 1887, forty-one cases of this fever have come under my care. I commenced in that year the use of salicylate of ammonium as an antipyretic and antiseptic remedy, in doses of five to seven grains every two hours, from 1 p. m. to 5 a. m. next day, then from 6 a. m. to 12 noon, three grains of quinine every two hours.

This was continued throughout the disease as a routine treatment, and complications met by combining the necessary remedies.

Whenever the patient perspired greatly or the fever was greatly reduced, the doses of salicylate were diminished or left off. Later the ammonia salt was given continuously, and salicylate of qunina with strychinia combined, alternated with sulpho carbonate of zinc.

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when diarrhoea; salol and guaicol carb, if the zinc was not indicated. Calomel was not administered for constipation in these cases, but I have never hesitated in giving the salines or vegetable laxatives when indicated. Eight of this series of cases had hemorrhages from the intestines, one profusely. One patient died, by reason of a complication with pneumonia.

While I can not positively say that this course of treatment has aborted the disease in any case, results prove to me that it greatly modifies its course as to severity, and shortens the period of convalescence. In nearly all my experience with typhoid fever, it is not thought necessary to call a physician until the patient has been sick several days, owing to its slow development, but in numerous instances, when the other members of the family have complained of malaise and evening fever, the ammonia salt has been given with complete relief in two or three days. The temperature, after a short continuance of the remedy, never went to over 103 degrees, unless the salicylate was left off, and at such times a small dose of acetanilid was given for the speedier action, after which the salicylate in sufficient dose, controlled the temperature. Since using this remedy my patients have had no delirium; as a rule they have always felt comfortable, and have nearly all expressed their belief that they felt perfectly able, if allowed, to be up and walk about While the ammonia is somewhat of a cardiac stimulant, I have always given strychnia at the same time on account of the known depressing effect of salicylic acid, but I have never with this treatment noticed signs of failure, except the one case of complication before referred to.

As a diet, I prescribe milk to the amount of the power of digestion, regularly given every four hours, or in its place once or twice a day a soft boiled egg, or a custard made of milk and egg, sweetened and seasoned to suit the taste; for I have found in nearly every instance, since the ammonia treatment, that the patient retains the sense of taste; buttermilk given occasionally for a change in place of the sweet milk, and once in the twenty-four hours, corn starch pudding or roasted potato, thoroughly cooked until it can be powdered, then covered with sweet cream and seasoned. Acid drinks, fruits deprived of skins and seeds, and especially bananas, are very

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much relished, as a rule, and may safely be given with the other nourishment. Caution should always be used, and the patient not overfed.

I am aware that nothing herein is especially original in the treatment of typhoid fever, and that some are claiming more remarkable results by slightly different formula, and more frequent dosage. Nevertheless, I regard the therapeutic measures used in this last series of cases as scientific, safe and fairly successful.

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PURPURA HEMORRHAGICA.

GEORGE B. M. BOWERS, M. D., FORT WAYNE.

Purpura hemorrhagica is a disease characterized by hemorrhagic lesions of the skin and muocus membrane. It is no respecter of persons, but may develop in persons of all ages, classes and conditions. It usually has a rapid development, characterized by nausea,. loss of appetite, headache, languor and dizziness. The spots usually make their first appearance on the lower limbs, and spread rapidly to the body and upper extremities—generally with hemorrhage from all the mucous surfaces of the body.

The only disease with which this disease can be confounded, is scurvy. The difference can be easily distinguished by the methods of living and hygenic surroundings. Scurvy is always caused by bad hygiene, improper diet and lack of vegetable food; there is always present extreme weakness, general debility, impaired circulation, tumefaction of gums, with bleeding and loose teeth. The development of purpura is usually rapid, and is often developed in persons previously healthy, and with excellent hygienic surroundings. The treatment, duration, progress and pathology, I can best explain by describing the following case, which I had the satisfaction of treating during its entire course:

Miss A. M., age twenty, tall, dark brunette, well nourished, previous health good, with no hereditary or constitutional taint; nervous temperament.

The patient first called at my office November 11, 1895, complaining of sore throat. I examined patient carefully, and found a few purpuric spots on the mucous surfaces of mouth and throat. The temperature and pulse were normal, and in fact no other symptom existed at that time. I prescribed a simple astringent gargle and

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carbonate of iron internally. No more was heard of my patient until November 29th, when I was called to see her and found hemorrhage from the mucous surface of nose, mouth and throat. The gums around the teeth and papilla were bleeding. Purpuric spots were distributed on all parts of the body.

At this time the patient was suffering from intense headache and nausea from the continuous presence of blood in the mouth, but the temperature, pulse and appetite were still normal. Now the astringent gargle, iron and ergot were prescribed. This treatment was continued until December 5th, the patient continually growing worse, the hemorrhage having extended to the bowels and urinary tract. Large quantities of blood were vomited and passed form the bowels with the urine.

About this time a consultation was asked for, and all the former treatment was stopped, and acetate of lead was prescribed internally and locally. With this treatment there was some improvement until December 11th, when a relapse occurred and another consultation was held. At this consultation the acetate of lead treatment was discontinued, and proto-nuclein was prescribed internally and the powder locally. This treatment was pursued vigorously for several days, but without any improvement whatever, and was followed by corrosive sublimate in small doses internally, and a solution of the same for local use. This seemed to have a good effect, and the patient improved to such an extent that hopes were entertained that a specific for the disease had been found. The effect was only temporary, however, and about Christmas another consultation was held, and oil of organum was prescribed, but with no apparent benefit. Up to this time the pulse and temperature were normal, but fever and intense headache developed; the sight became impaired to the extent of almost total blindness. The purpuric spots all disappeared, and hemorrhage of red blood ceased; but there was continuous oozing of serum. At this time the complexion became very anaemic—entire loss of appetite. Beer and alcoholic liquors were prescribed. A very annoying cough now developed, which could not be allayed by any remedy.

About January 1st I called on Dr. W. H. Myers to share the responsibilities of the case. At this point all our previous treatment

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was discarded; and tincture of chloride of iron, ergot and alcoholic stimulants were prescribed. The patient gradually grew worse until January 21st, 1896, when death relieved her of her suffering.

In studying the case reported, two examinations of the blood were made by Dr. Drayer and myself. On the first occasion six smear preparations were taken from the lips and tongue. Of these, two were stained, and four were examined without staining. In none of these slides did anything abnormal appear. A second examination was made with the view of determining parasites in blood. Three cultures upon agar were made, taking the blood from oozing portions of the tongue after sterilization. From these cultures we were able to isolate staphylococcus albus. No other examinations were made until after death.

Autopsy—General appearance extremely aneamic, with purpuric spots freely distributed on all parts of the body.

Head.—After removing skin, purpuric spots are seen between skin and cranium; larger on right side, found on both branches of lambdoid suture. The cranium is removed, and beneath dura mater is seen an evenly divided congestion seemingly covering the entire brain, and on opening is found to consist of clots about one-quarter to one-half inch in thickness. There was no adhesion of clots seen at optic commissure, but beneath optic commissure clots were found to be organized on both sides in the form of a thin sheet, and at one point had a gangrenous appearance. Form of clots were downward toward the ears. The clots on the brain were nearly opposite purpuric spots above the dura mater. The ventricles were normal; medulla oblongata and cerebellum normal in appearance.

Abdomen and Thorax.—Fat evenly divided from one-half to one inch in thickness. Purpuric spots found on apex of right lung and grayish spots toward base. There was a large clot in the interior of left lung, and a few adhesions about lower lobe. Petechiae on serous membrane of each lung. Lungs feel boggy—fatty degeneration.

Heart.—Externally fat, color dark. Adherent to right ventricle is nodule of fat, size of hickory nut, communicating internally with ventricular wall. Small post mortem clot in ventricle. Ventricular walls degenerated by fat. In the left auricle was an

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appendix or diverticulum, the size of a walnut, containing nothing, the structure of which resembled the rest of the heart. The right auricle was congested—petechiae evenly distributed throughout the entire structure of the heart.

Liver.—No adhesions, medium size; quite firm in consistency, appearance pale; petechiae evenly distributed on serous coat.

Stomach.—Large size, filled with gas, anaemic in appearance; adhesion to transverse colon, petechiae evenly distributed.

Spleen.—Normal size; congested; fatty degeneration.

Kidneys.—Normal size; capsule adherent. No petechiae visible. Appearance pale. Proper consistency; medulla contains fatty or yellowish areas; also same appearance at hilum.

Transverse Colon.—Adhesion between it and stomach.

Pancreas.—Normal size and consistency; petechiae even all through structure of organ; evenly marked fatty deposits.

Uterus and Ovaries.—Normal.

Post-Mortem.—Bacteriology and Microscopy.— Unfortunately for investigating, the undertaker was called first, and the body was injected with preserving fluid used by them. Small bits of the following tissues were taken: Dura mater where the large clot had formed, meningeal artery, lung, heart, liver, spleen, pancreas and kidney. An attempt was made at cultivation of any organisms that might be present. Inoculation of glucose agar tubes were made from cerebro spinal fluid, brain clot, lung, heart wall, spleen, pancreas and liver. These tubes were grown in and out of hydrogen at room and body temperature; twelve tubes in all inoculatd. Observations were made daily, but no results were arrived at. These negative results were due of course to the poisonous injection given by the undertaker. Of the microscopical appearance of the tissues examined, there is not much to be said except that there was a superabundance of fat deposited about the throacic and abdominal organs. The heart muscle was especially the seat of change, not so much of a lipomatous character as of disarrangement of cells and fibres. There appeared under the microscope broken fragments of heart muscle with frequent empty spaces. Deposits of fat were noticed in tissues in every organ in the body. Judging from observation, it is my opinion that the hemorrhage of this case was caused by fatty degeneration of the muscular coats of the blood vessels.

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EPILEPSY—ITS CAUSES, PATHOLOGY AND TREATMENT.

DELIA H. HOWE, M. D., FORT WAYNE.

A brief summary of a study of the personal and family histories of 150 epileptics who have come under my care recently, is here presented, not with the thought of adding greatly to our knowledge of the etiology of the disease, but with the feeling that many facts must unite to form the lens that shall eventually focus light on this subject, and that every additional fact may help a little.

I have found that drunkenness, without other demonstrable mental defect, existed in a parent or grandparent in 29.17 per cent of my epileptic cases—counting only those whose family history was fairly complete. Tuberculosis existed in parent or grandparent in 20 per cent. Insanity or feeble-mindedness in 15 per cent. There were both drunkenness and epilepsy in 3.4 per cent., and drunkenness and mental disease in 5.9 per cent. Adding these to the cases where drunkenness appeared without apparent mental defect, we have 38.47 per cent. of all cases with a direct inheritance of inebriety in parent or grandparent. This seems a much larger percentage than can be accounted for by the prevalence of drunkenness among the poor, and, I believe, larger than can be shown in the history of almost any other disease.

Direct heredity of nervous or mental disease can be traced in 33.33 per cent. of the cases—a showing somewhat smaller than Gowers makes it, but larger than is given by many other authorities.

At most but 10 per cent. show a good family history, and even in some of these there are suspicious degenerative stigmata in various members of the family.

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As predisposing causes other than heredity, pre-natal influences are supposed to have been operative in 12 per cent. of all cases; but many of those making this claim show also a bad family history, and probably the pre-natal influence had less to do with the development of the disease than was supposed.

Difficult or prolonged labor is recorded in only 8 per cent. of the 150 cases, and instrumental delivery in but 1.5 per cent. These figures, I believe, are no higher than the average for all children born. There was but one premature birth in the 150 cases.

Mental impairment before the beginning of the epilepsy is recorded in 12 per cent. of all cases; but the great bulk of our epileptic idiots and imbeciles are such because of their epilepsy, and not epileptic because of their imbecility. Until the epilepsy is cured they will continue to retrograde mentally in spite of any system of education. From the above statistics it would seem but fair to conclude that inebriety, and nervous and mental disease in ancestors, are the most potent predisposing causes of epilepsy.

While tuberculosis is common in the ancestral history of epileptics, I doubt if it is more so than in that of other individuals.

As to exciting causes: Of 143 cases examined, in 58 there was nothing discoverable. Fifty-two cases are believed to be the result of acute febrile disease. Worms are accredited with being an exciting cause in but one case. Digestive disorders in three cases. Improper treatment by physicians is given as a cause in three cases, and an overdose of Godfrey's cordial is blamed for one case. To traumatism is attributed the disease in nine cases, to teething in four cases, to fright in two cases, to early weaning in one case. Use of tobacco is the exciting cause in two cases. Surgical operation in two cases. Urethral irritation in three cases. Delayed menstruation in one case, and shock by lightning one case. Imitation of another's spasm is claimed to have been the exciting cause in one case.

Hereditary taint is as pronounced in those cases in which an exciting cause was given, as in those in which none can be discovered—a fact which favors the belief that predisposition is a necessary element in the production of the disease, and renders it doubtful whether an exciting cause can induce the trouble in a brain unpredisposed.

As to the pathological anatomy of epilepsy, it may be said that

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observable brain lesions accompanying the disease are very common in cases in which the epilepsy began in infancy or early childhood. This certainly proves nothing as to the cause of epilepsy, and a study of these lesions will be as fruitful of information in that direction as would be a study of the entozoa which in the intestines of children may also be an exciting cause of epilepsy. It is quite as illogical to assume that since brain lesion is demonstrable in many cases of epilepsy, therefore were our methods sufficiently accurate, we should find it to exist in causal relations in all cases, as it would be to claim that since heart disease is found in many cases of rheumatism, therefore, by careful examination of the valves of the heart, we might discover the cause of the latter disease.

No constant lesion has been found in the brains of epileptics and if it had been found, it would still remain to be proven that the lesion was the cause and not the result of the epilepsy; and, moreover, that it was a direct, and not merely an exciting cause, acting, as might undigested food in the alimentary canal, through the mediation of nerve reflex.

As our already remarkable staining methods become more and more perfect, some startling development in the pathological anatomy of epilepsy may occur; but I feel we shall find as little in the dead brain cells to help us in understanding their living functions as we should find in the zinc and carbon of our electric batteries to enlighten us as to the nature of electricity. I believe that rather by experimenting on the living, than by staining of dead cells shall we be able to arrive at conclusions.

There is something that enables the cell to choose for itself its own proper pabulum, rejecting what it does not want; and it chooses that which is necessary for its own existence, and enters into its own structure; and in addition to this, that which enables it to perform its function—just as an engine must have its worn out parts replaced, and also be supplied with water, and coal, and flame to ignite the latter before it can do its work. Now, I see no reason why a cell should not be structurally complete, and succeed in getting enough nourishment to keep it so, but, not getting enough in addition to do its work, it fails in function. Long continued failure of this sort might result in inability to properly use the materials for work when they are

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again supplied,—just as the engine, becoming rusty from disuse, acts less readily, or, the fire having burned low in the furnace fails readily to ignite new material when it is supplied. In the living body we know that failure to perform function is soon followed by diminished power to perform it. No machine rusts more quickly than the human machine, and no cells lose their vital spark which enables them to turn their food into force more quickly than the nerve cells.

Naturally cells of the highest function are affected first, since the highest are the last developed, and the least important for the mere existence of the individual. Furthermore cells thus weakened bequeath their weakness, and herein lies the secret of inherited diathesis, inherited diseases being but defective cell nutrition—and this I believe epilepsy to be.

We must bear in mind that the convulsion does not constitute the disease of epilepsy. It is that deficiency in the nervous system that permits the convulsion to occur without adequate exciting cause, that constitutes the disease. This deficiency is generally acknowledged to be in the cerebral cortex. I cannot believe that nature is so prodigal of her powers that she stores up energy in the motor cells of the cortex merely to let it all off at once in a grand-mal attack, as a boy would a bunch of fire-crackers. I do not believe in nature's "nerve storms." I am convinced that the fit is but the result of suspension of function rather than exaggeration of function—that it is a sudden loss of the power of inhibition, which we know that cortical cells exert over the motor centers in the cord and cranial nerve nuclei. The spinal centers may be likened to repositories or factories whose product is nerve energy. They are ready to give this up at the command of any authorized messenger, coming either from the peripheral nerve endings, or from anywhere along the course of a nerve, or from those interpreters of the will, the so-called motor cells of the cortex. But all the while a careful watch is kept over the treasure by the cerebrum, which sends agents to accurately measure the amount of nerve energy that may be allowed each applicant. Let this guard be withdrawn, at the same time that unusual demands are coming from any source to the spinal centers, and the latter will dispense their energy prodigally. This may seem fanciful, but it accords with accepted physiological facts. We have proven that the

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force that results in motion need not always be generated in the brain. We can claim nothing more than that a stimulus of some sort may emanate from the motor cortex which has power to liberate the energy of the spinal centers, and also that the cerebral cells control to a great degree the spinal centers, in some, if not all of their functions. This controlling power is, I believe, the highest and latest developed of cerebral functions, and, consequently the one most, and earliest, affected by nutritional disturbances, and the one most likely to bequeath its imperfections to posterity.

By what cells this function is subserved, we do not know. That it is of extreme importance in the performance of cerebral acts cannot be doubted. All productive mental activity depends upon it. Without it there can be no attention, and the person is at the mercy of every chance idea, of every suggestion, of every impulse.

This may explain those forms of epilepsy which are manifested by excessive irritability, erratic and violent conduct, often issuing in crime. The motor spasm does not result in such cases, either because the cells governing the motor apparatus still retain some inhibitory power, those controlling ideation being more affected, or else there is no special irritation of spinal centers at that particular time, and the loss of the cerebral control of these centers is evidenced merely by restlessness and non-spasmodic activity. Some irritating cause is perhaps always operative in producing a fit; but such cause is not the disease. It only renders the manifestation of the disease possible. After a time reaction becomes more and more prompt, and the exciting cause may be less and less intense, until finally such slight irritations as are daily present in many comparatively well people, may be sufficient for producing the fit. The cause may be psychical, as is often evidenced in the spasms produced by fright. Sometimes the suggestion of a fit is sufficient irritating cause to induce one, and the boy who has a spasm to order for a quarter may be feigning less than he is credited with.

When the exciting cause of spasms is of such intensity as to overcome normal inhibition, the disease is not epilepsy. Such are uraemic and other toxic convulsions and convulsions from certain brain diseases. There is often no difference between the convulsions in these cases and those of genuine epilepsy; but they differ in their

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pathology in that they are not dependent on loss of cerebral function primarily.

Probably no disease is inherited except through the nervous system—if we class such disorders as syphilis as pre natal contagion rather than inheritance. Even in tuberculosis it is probable, as Bouchard has pointed out in the case of other infective diseases, that withdrawal of the normal influence of the nervous system allows the tissues to so relax their vigilance that the bacillus may find admittance. It is the nervous system that, like a vigilant overseer, keeps every tissue of the body to its full duty.

Considering these facts, how gravely important it becomes that a healthy nervous system be transmitted to posterity. The late hours, the overwork, the excesses of all kinds that we fancy have not scathed us, except to make us somewhat nervous, hasty and irritable, all of which symptoms are but manifestations of defective inhibition, will, we may have reason to fear, affect detrimentally the nutritional power of the cerebral cells of offspring.

If our theory is correct, the treatment of epilepsy, to be effective, must begin long before birth; and it is due posterity that we avoid everything that tends, even temporarily, to lessen the control that the nervous system normally exerts over bodily function; and also that we prohibit the propagation of defectives by legal enactment, and the provision of homes for epileptics and feeble-minded persons.

Regarding epilepsy as a nutritional disorder, the plan of treatment would naturally suggest itself as that which is most effective in other chronic nutritional diseases, namely: hygenic measures of various kinds, especially those tending to stimulate cerebral nutrition.

There can be little doubt that happiness and contentment have a marked influence in bringing the cerebral cells into a condition favorable to the taking up and utilizing for the performance of function the food offered them. It is a physiological fact that the boy becomes exhausted by a forced and distasteful task long before he has exerted the amount of energy that it would require to tire him in play. It is claimed that epileptics rarely have seizures during entertainments in which they are much interested. On the other hand I have known comparatively trivial disappointment to throw an epileptic into a condition of status. This does not prove that spasms

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are controllable by the will,but only that pleasure stimulates the controlling brain cells to more active nutrition. Idleness, accompanied as it too often is by unhappiness, must, on the other hand, tend to further deteriorize cell nutrition.

Irregularity of habit is disastrous to brain nutrition, and it is the regularity enforced in institution life that tends toward cure in spite of too frequent idleness and unhappiness. Yet monotony is also to be avoided, and a change of surroundings often has most marked stimulating effect on nutrition, and, consequently on epilepsy.

All sources of mental irritation should be removed from epileptics, and a uniform kindness, gentleness and forbearance should be exercised toward them.

They are frequently inordinately ambitious, as were Caesar and Napoleon, both of whom were epileptics. They may enter with zeal into mental competition in schools. To check such ambition may often prove harmful, but to direct it patiently and wisely, may turn a Napoleon into a philanthropist, and bless the world.

In addition to the mental and moral treatment thus indicated, a large fresh air supply, especially at night, is imperatively required for the oxygenation of tissues without which they cannot be properly nourished. For the same reason out-door exercise is demanded.

Diet, not necessarily nitrogenous, nor non-nitrogenous, but that which is best suited to the individual, and therefore of sufficient variety to enable each case to be suited, is most scientific. We are seeking what will best nourish the patient, and that depends largely on habit, and family inheritance resulting in tastes, as well as on special temporary conditions of the system. It is not wholly wrong to claim that what we like best agrees best.

Whole wheat is doubtless in most cases preferable to the starch, which so largely comprises our fine flour, not only because of the greater proportion of phosphates and proteid in the former, but also because there is often in epileptics slow peristalsis and constipation, which require bulk, and moderate intestinal irritation to overcome.

Fat is undoubtedly very important for the nourishment of the nervous system, and should enter largely into the dietary in a digestable form,—preferably as cream, olive oil, butter or bacon. Cod liver oil very often disagrees.

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Meat should be thoroughly divided in its fibre before swallowing, and taken only in small quantities, for reasons which there is no space to discuss here. Nearly all authorities unite in condemning the use in nervous diseases of sugar and syrups to any great extent, because of the fermentative process they are liable to undergo in the alimentary canal, as well as for other reasons. Sugar of milk is less liable to this, and may be substituted where craving for sweets is strong.

Milk is of course the nearest to our ideal food, but does not always agree, and should not be forced when it fails to do so.

All the indications for mental, moral and hygienic treatment may, I believe, best be met by the establishment of epileptic farm colonies, where happy, contented and useful lives may be passed by the epileptic in companionship of his own kind;where the painful feeling of isolation and unlikeness to those about him cannot enter, and where healthful out-door occupation may be his, and his pride be somewhat satisfied in knowing that he is, in part at least, earning his own living.

The medical treatment of epilepsy remains empirical. Everything new seems to make an impression. Even shock, traumatism, and somatic disease often arrest the spasms temporarily. It would seem that in their efforts to accommodate themselves to any sudden change of conditions, there is a temporary increase in the functional activity of the cerebral cells. The relapsing state is often worse, however, than the first.

I have tried, during the past ten years, the bromides in a large number of different combinations and by themselves; and, while I must condemn their careless and indiscriminate use, I am forced to accept them as our best known remedy in epilepsy. I doubt if they ever effect a cure. Cures wrought by changed hygienic conditions, are, I believe, often attributed to them. I would prefer hygienic conditions without the bromides, to bromides without the hygienic conditions.

The use of large doses of muriate of ammonia, as recommended by Dr. Hyram Coon, of Colfax, Ind., I tried persistently in fifteen cases, and must condemn it in toto.

Adonis vernalis has not proven in my hands superior to digitalis.

Horse-nettle has given no satisfactory results.

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The coal-tar derivatives, especially phenacetine, have been useful in a few cases where the exciting cause of the attacks was psychical, or where mental excitement or undue depression was present, but I cannot be so sanguine as is Dr. David Ingils, of Detroit, in regard to their efficacy.

Hyoscyamus and belladonna in a few cases have appeared useful. Often they fail signally.

Thirty-five cases I have treated by Flechsig's method of daily increasing doses of opium, until the system is well under the influence of the drug, when it is stopped and large doses of bromide given. This is by far the most satisfactory treatment I have so far found. The time has not been sufficiently long to declare my cures from it, but several cases have not had a spasm since undergoing the treatment from six to nine months ago, and nearly all have been decidedly benefitted.

Indiana School for Feeble Minded Youth, Fort Wayne.

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DIABETES MELLITUS AND ITS TREATMENT.

CARL PROEGLER, M. D., FORT WAYNE.

Diabetes was without doubt known in olden times. We find it in manuscripts of Indian physicians in the work of the Roman Celsus and the Greek Aretaus (100 years before Christ) mention of the disease, which is characterized by an enormous flow of urine and an unquenchable thirst and a rapid emaciation.

In the seventeenth century, Thomas Willis, an Englishman, detected sugar in the urine by the sweet taste of the same, but the exact scientific results concerning the cause of the disease, occurred in the middle of our century. It begins with the famous experiments of Claude Bernard, by wounding the base of the fourth ventricle.

We sum up diabetes as a diseased condition where the capability of the organism to reduce grape sugar is lowered by a diseased condition of the organism. As far as the nature of the disease is concerned, we are still ignorant. The carbo hydrates are in normal health stored, so to speak, in the liver and muscles as glycogen, and there utilized by the system as needed. Concerning the origin of the disease, there is a degree of vagueness, but in those cases alleged to have given rise to diabetes are classed shock, cerebral diseases, exposure to cold, malaria, etc.

Claude Bernard's diabetic center in the Medulla is an occasional cause; also diabetogenous obesity (Van Noorden, etc.) There are a good many believers that diabetes depends in some degree on digestive impairment, especially the intestinal track.

Dickson regarded the disease as a result of some obscure vice of digestion and assimilation, others classify it under the head of neuroses. The disease is prevalent more in men than women. Hebrews are especially very prone to it. There are also cases of

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heredity which are clearly traceable. Harley gives quite a practical view of the subject by classifying two great divisions in diabetes. The first are cases of excessive sugar formation; the second is due to diminished sacharine consumption.

The first class of cases he considers more amenable to treatment; the second especially fatal on the principle, no doubt, that is much easier to overcome sugar formation, than to get rid of the accumulation of sugar after it is generated, and the formation well established. It is of little practical importance for treatment, whether excessive sacharine formation, or that which emanates in the liver or pancreas are the causes. We must have in view the necessity of withholding in one case material which facilitates sugar manufacture by the liver, and in the other to overcome that condition which permits perverted functions.

Remedies which have been found efficacious in some instances, have had, when tried by others, no effect. Antipyrin, salol and peroxide of hydrogen have been advocated as useful remedies. Nicolaier treated seven cases of diabetes with salol, and found that its administration diminished the amount of sugar without any diabetic restrictions; that while salol may overcome the intestinal fermentation, it, nevertheless, corrects in some way, the inexplicable process of sugar formation.

In some cases strictly albuminous diet was far more tolerant where thymol was administered. No doubt the digestive restrictions and diet will materially assist the treatment when due to excessive sugar formation. The dietary is somewhat modified as compared with that in cases associated with malassimilation. In the latter instance the body must be supplied with easily digested food, so that emaciation is retarded, and the vital powers of the patient sustained. Butter, cream and fresh milk should be given, and if the stomach is tolerant, we may use cod liver oil in the form of emulsion best suited to the pancreatic complication of the disease.

To combat debility or very great loss of flesh, authorities agree that assimalable forms of sacharine substance should be given, believing that if we supply such nutritive elements when it is demanded, the chances for the assimilation are greatly enhanced, and physical improvements will to a certain degree follow.

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Depression is not so much due to sugar formation in blood as its impaired power of absorption. Kulcz, of Marbach, has recommended laevulose, the analogue of diabetic sugar; also in those cases of excessive sugar formation where mental failure in our patients appear, we do not employ dietary restrictions. Here the treatment should be less guarded, and mixed diet of brown bread, fats, foods with salads and green vegetables allowed.

Purgative medicines ought to be given cautiously to diabetic patients. Here saline and alkaline non-purgative medicines are permissible. In giving them we reduce and remove sacharine supply from the intestines, so that undigested food has hardly any time to be absorbed, and furnish through the liver material for sugar manufacture. The latter, the alkaline non-purgative, acts as alkaline medicament in emulsifying fatty foods and rendering them easy for digestion.

The narcotic and anodyne drugs have been more or less used and commended, but no strict rule can be laid down as to which is the best to use in all cases. As one preparation of the same drug, opium for instance, will not succeed, another must be tried.

Codeine, when tolerated, has been for a long time in favor, and it is certainly to be preferred to morphia and crude opium, on account of its less destructive effect on digestion. Croton chloral, in combination with vegetable narcotics, has been mentioned very favorably, and gave good results. In most cases of diabetes, the patients are very much depressed. Here we may expect very great benefit from strychnine, nux vomica, valerian, and other combinations. It would be useless to give in detail all the multifarious remedies. Favorable mention ought to be made of pancreatic preparations, as tested by Dr. McKinzey, and Neville Wood. In a general way they proved somewhat beneficial, but their success in lessening sugar production in the urine was nil.

Thirst was, however, modified, and the quantity of urine passed was reduced. It seems that from intestinal antisepsis, however, combined with guarded dietary restrictions, most beneficial results may be realized. The remedy which has most commended itself to me is benzosol, or benzoyl guiacol.

This remedy has been extolled by Piatowsky, in three

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valuable papers. My own experience with the drug fully justifies its use, and corroborates the observations of this distinguished authority.

Seven cases under treatment were transformed into mild ones, even in some cases sugar disappearing entirely. I began with 12 gr. daily, in capsules, four times a day, until I reach, after a week, the maximum dose, about 60 gr., slowly reducing the same until only 12 gr. are daily taken.

A traveling man, who has spent some months in Germany, in a sanitarium for diabetes, came home much improved, but soon had a severe relapse, passing about 135 to 140 oz. of urine daily; amount of sugar, 2 1-2 per cent., specific gravity, 1131. Put him on benzosol, 12 gr. daily, until I gave him 60 gr. per day. After a week's treatment, sugar diminshed to about 1 per cent., and urine voided about 70 oz. specific gravity, 1017. To-day, with the phenylydrazin test no sugar, specific gravity, 1013, and voids not more than 35 oz. The first thing noticed with benzosol treatment is the abatement of polyuria, the most troublesome symptom in diabetes. All the cases so far treated with the drug have improved. As to its mode of action, I may join Piatowski, who closed his report with the reflection that it is far easier to propound theories than to answer them.

Diseases of the skin and eyes which are very often found in diabetes, I have omitted on account of the shortness of the time alloted to the paper. In a future article I shall dwell on them.

161 Griffith street.

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SOME OF OUR NEW THERAPEUTIC RECOURSES.

S. H. HAVICE, M. D., FORT WAYNE.

In writing this paper I will not mention each one of the remedies which have been brought to the attention of the medical profession within the last few years, for they are legion, but will confine my remarks to a few of the newer remedies, especially those whose influence has been more or less ascertained by clinical investigation. While I regard anti-toxine as one of the greatest therapeutic agents of this century, I will mention it here for the reason that it has received more attention from the profession and is better understood than many of the other new remedies.

The first remedy that I will call your attention to, is creolin, a form of cresol. This preparation is obtained from coal, by dry distillation. This body appears as a black alkaline fluid of the consistency of syrup. Its specific gravity being from 1040 to 1080. Solubility:—Creolin is soluble in alcohol, ether and chloroform, and insoluble in wood-spirit; with water it forms a milky mixture. Therapeutic applications:—This remedy is highly valuable as a general antiseptic and sedative. It is of the greatest value in the lying in state as a wash for the hands, and for vaginal irrigation. It cannot be used as a solution in which to place instruments, as it makes so opaque a mixture with water as to prevent their being seen.

When used as a vaginal douche it should be employed in the strength of 2 per cent. solution. One property which is of value is that it forms a slippery coating over the maternal parts during parturition. In cystitis in the female, Parvin highly recommends it as a vesical wash in the strength of a one per cent. solution, or after the bladder becomes accustomed to its use two per cent. solution. In

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the eye, Alt has used a one to two per cent. solution in blepharitis, keratitis and phlyctenular opthalmia. It has done good service in intestinal disorders, and has been used internally with asserted success against phthisis.

Creolin has of late been found beneficial, given by the stomach, in the treatment of vascular affections, such as chlorosis. This drug is said to be almost a specific in scrofulosis, and to be of more value in cholera morbus. In the treatment of the latter disease, this drug is added to the milk used for sucklings, and in this manner this fluid becomes thoroughly sterilized. This remedy is steadily and rapidly growing in popular favor, and bids fair to rival carbolic acid. In addition to its powerful germicidal effects, it is non-irritant and practically non-toxic. The claim first advanced that this preparation was absolutely non-poisonous, can no longer be supported, since cases have been reported where toxic symptoms have followed its use.

When given internally—and this is best done in capsules—the dose is from one to five minims. For scrofulosis and chlorosis, a daily dose of creolin, of from one and one-half to two drachms is recommended. To sterilize milk for children suffering with cholera morbus, the bottle is first rinsed with one-half per cent. creolin water, and to the milk of the bottle is then added one drop of the drug. In this manner the taste of the antiseptic is almost wholly destroyed.

Phenocoll is a new antipyretic remedy, closely allied to phenacetin; is obtained by the interaction of para-amido-phenotoll and glycocoll. The drug used in practical medicine is the hydrochlorate. Physical properties:—This salt occurs as a white crystalline powder. Solubility:—This drug is readily soluble in water and in alcohol, but only barely soluble in chloroform, ether and benzol. Physiological action:—First, on the nervous system, phenocoll causes paraplegia, and destroys sensation and motion when given in sufficiently large doses, especially by influencing the spinal chord. Circulation:—Small quantities have no effect on the circulation; large amounts, however, diminish the blood-pressure and the pulse-rate through a cardiac action. This blood exercises no influence upon the blood itself.

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Respiration may be slightly accelerated at first, but generally depressed under the full action of phenocoll. Temperature:—Phenocoll does not seem to affect normal temperature. It decidedly reduces the heat of fever, however, the reductions being due mainly to an enormous diminution of heat production, without any alteration of heat distribution. Therapeutic properties:—Phenocoll has many valuable therapeutic properties. It has produced excellent results as an antiphyretic in febrile disorders, such as typhoid, in phthisis, and in other pulmonary affections; as an antirheumatic in many of the acute forms of rheumatism, and as an antineuralgic, especially in cases of an hysterical nature. This drug has been found very beneficial in malaria and influenza. In the former disease it is used perhaps more extensively than in the other. Affections and careful and continued investigation has proven that it is one of the most useful and in many cases the best remedy that we can command for the treatment of this disease. This is particularly so in pregnant women suffering from malaria. Here it seems to be a most efficient remedy, while at the same time it has no action on the uterus. In fact it has been found superior to quinine in the treatment of a large number of cases of malaria, with the advantage that the new remedy does not produce toxic symptoms. Tinnitus aurium and skin eruptions, as in the case of quinine, have not been observed under the use of phenocoll. The excellency of phenocoll in malarial diseases was first pointed out by Albertonia. He reported successful results with the use of this drug in 22 cases out of 29. Cucco, according to his preliminary report, treated 84 cases of malaria with the same drug, with most excellent results. He says: "Brilliant results were obtained in 52. In 21 the value was uncertain and in four cases it failed to do any good." The other seven cases were not observed sufficiently long to give any accurate information, though in general the results pointed to the usefulness of the drug. Beck, writing of the antiseptic properties of the drug, says that it surpasses iodoform, because it dissolves easily, is odorless, does not produce eczema, is not contra-indicated in kidney disease, and on account of its non-poisonous effects, can be applied to very extended surfaces. It is useful in cutaneous eruptions, acute gonorrhoea, lucorrhoea and other similar disorders.

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Administration:—The dose of phenocoll is from 10 to 15 grains three to five times a day, and it may be administered in the powdered form in aqueous solutions or in capsules. For local purposes it may be employed in aqueous solutions of 5 or even 10 per cent., and in ointment with lanolin in the strength of 20 per cent.

Sulphonal is obtained by the interaction of anhydrous mercaptan, and anhydrous acetone, in the presence of hydrochloric acid gas. Physical properties:—Sulphonal is a colorless, odorless substance, made up of prismatic crytals, melting at from 257 to 258 degrees F. Solubility:—This drug is soluble in alcohol and ether; also in 100 parts of cold water, and from 15 to 20 parts of boiling water. The action of sulphonel is not well known. It is said to act as a depressant to the nervous system, decreasing reflex activity by stimulation of Setschenow's centres. In moderate amounts this drug appears to exercise no marked action on the circulation. Its influence on metabolism is nil. Sulphonal, given in small quantities, appears to be entirely destroyed in the body, it being changed into a sulphuretted substance. It is said to act slightly as a diuretic. The chief properties of sulphonal are those of a hypnotic. As such it has been used extensively in a variety of nervous disorders, whose principal symptom is sleeplessness, with or without the existence of pain. This drug is of special value in some forms of insanity, in neurasthenia and in hysteria. This medicament has likewise been recommended in the treatment of diabetes mellitus.

Administration:—The dose of sulphonal is from 15 to 30 grains, and it is best administered in capsules or in mucilage of acacia. Where a rapid action is desired, it should first be dissolved in hot milk or water.

This drug should not be used in diseases of the heart.

Sulphonal is capable of causing serious symptoms. Sulphonism is made manifest by cephalalgia, buzzing in the ears, weakness, and physical and mental torpor. The symptons of chronic poisoning are constipation and vomiting, accompanied with ataxic nervous troubles. Palpatations, swelling of the joints, pain in the lower extremities, and a rubeolar exanthen have been observed under the action of this drug. In some instances there may occur difficulty of speech, oedema of the eyelids, ptosis, cyanosis and somnolence.

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When any one of these symptoms appear the drug should be suspended immediately.

Asaprol, recently introduced into the market, and into practical medicine, occurs in ascicular crystals. Asaprol is incompatible with all the salts that precipitate lime, particularly with the soluble sulphates and the bicarbonate of sodium; it is also incompatible with the iodide of potassium, and the quinine salts.

No extended studies have been made regarding the general physiological action of this medicament, but it has been found that it reduces hyperpyrexia very decidedly. It causes an increase in the amount of urine secreted. Asaprol appears to be a powerful antiseptic, solutions of it of the strength of 5 per cent. preventing the growth of the microbes of Asiatic cholera, the germs of which are destroyed by stronger solutions of the drug.

This remedy is claimed to have acted most advantageously in acute articular rheumatism, and in acute and sub-acute polyarticular rheumatism. As an antiphyretic, it has been used with success in typhoid fever, influenza and pneumonia. Good results heve been observed in acute tonsilitis, both of adults and of children, as well as in the treatment of boils, and in that of infectious diseases accompanied with albuminuria. In the latter cases the albumen has disappeared from the urine in a short time. As an analgesic, asaprol has been serviceable in sciatica, intercostal neuralgia, tic douloureux and the pains of muscular rheumatism. Asthma has been relieved by this drug, and beneficial results have been noticed from its use in rebellious cases of chronic rheumatism.

This remedy may be given in doses of from 15 to 60 grains in cachets, or in solution of the strength of 5 per cent.; it can then be administered in anise-water, beer or coffee. For its antiseptic action asaprol can be used for gargles and for vaginal, urethal and rectal injections, from solutions of the strength of from 2 to 5 per cent. This drug may also be employed in the form of an ointment.

Mercuric gallate is said to have a close chemical relation to the tannate, and to be more stable than the latter. Gallate of mercury contains about 37.17 per cent. of the metal.

Owing to a rapid absorption, the presence of mercury has been detected in the urine within twenty-four hours after the ingestion of

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the gallate. This drug has caused apparently no mercurial poisoning of any kind, nor even stomatitis or salivation. Therapeutic applications:—Mercuric gallate has been used with good results as a powerful antisyphilitic remedy, ranking in utility with the protiodide and the bichloride, with the advantage, as just intimated, of not causing ptyalism when administered in therapeutic doses. This combination has been employed especially in the second and tertiary forms of syphilis. It is said to have rendered marked service in the grave forms of the second stage of the disease, as observed in alcoholic or cachcetic patients. In cases in which general cachexia, bad teeth, or digestive disturbances are prominent factors, the gallate is to be preferred to all other forms of mercury. The gallate of mercury is best given in pill form in daily doses of from one and one-half to three grains.

38 West Wayne street.

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THE RELATIONSHIP OF PATHOGENESIS, MORBID ANATOMY, AND DIATHESIS.

H. H. WEER, M. D., BLUFFTON.

To secure a semblance of rationality in our discussion we should first elucidate our comprehension of the several parts of our subject.

Pathogenesis is said to mean "the study of the origin and development of pathological processes."

Morbid anatomy "of the changes in the tissues and fluids of the body appreciable to the naked eye, or with the aid of the microscope."

Diathesis "the inherited or constitutional predisposition to certain diseases."

Pathogenesis is at times a matter of mathematical computation, effects directly traceable to their initial causes.

Again the origin of pathological processes is so obscure or so antedates the medical man's appearance upon the scene, or is so enshrouded with superstitious ignorance that to attempt reasoning ends in conjecture. The skill possessed, or the time expended in fathoming pathogenesis opens the way for the clearer conception of morbid anatomy. Suspecting the origin as learned in pathogenesis, realizing the deviation from the normal, our conditions are approached so methodically, and knowing for what we search we recognize the changes in the tissues and fluids with the naked eye, or with the aid of the microscope, and are thus getting ready for some practical benefit.

Considering what is wanted, we look a moment at the means, forces, and material combined, called the animal economy. The vital principle, God given, we let rest on its throne of mystery. Its potency we feel and know, the nerve energy, manifest cell action,

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and power of mind over matter, we relegate to the theorist. The material, the which and what, we attempt to correct, improve and direct, brings us face to face with the study of the origin and development of pathological processes.

Proper material in proper environment produces normality.

Improper material includes the Aplastic, Cacaplastic, and Euplastic.

Aplastic material is not capable of forming, or is not organiplastic.

Cacaplastic material is susceptible of only a low degree of organization, as the indurations resulting from low or chronic inflammation, fibro-cartilage, etc., etc.

Euplastic material is capable of becoming organizable in a high degree—as in false membranes resulting from acute inflammation in a healthy person.

Considering the elements as we now have them, patent and latent, our attention is called to environment. This being natural the eliminative efforts of nature or normal retrograde metamorphosis furnishes the solution. Otherwise comes predisposition, defective vital tendency, atavism, obscure psychological forces, unbalanced organisms and organic lesions. Studying the where-with, the origin thereof, and the tendency thereto, forces the issue as we confront it in the sick-room.

For instance, functional endocardial or blood murmurs, are the result of changes in the natural constituents of the blood. Organic endocardial blood murmurs are produced by blood currents pursuing either a normal or abnormal direction. These subtile changes in constituents and direction we see causing such marked impressions at one vital center; how important when the conditions mentioned are given their due weight and influence.

Consider the possibilities at other seats of vital energy. The murmurs mentioned and their etiology give a faint conception of one of the multitudinous influences at work on a normal organism. Take a vaso-motor reflex, and sanguineous fluid deflection in quantity and quality, an impinged blood vessel or nerve, an excessively impressionable sensorium, improper cell action from imperfect cerebration, and tabulate your products.

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To this add expected maneuvers of Aplastic, Cacaplastic or Euplastic material, influenced by muscular, nervous and vital activity, continually in the state of excess, defect or perversion, retarded by the force of gravity, pressure or compression, and much is learned of the importance of pathogenesis and morbid anatomy in a general sense, allowing us to look intelligently into the concluding element of our subject—diathesis.

Dunglison says diathesis is "predisposition to certain diseases rather than to others; disposition, constitution, affection of the body." The principal diathesis mentioned are the cancerous, scrofulous, scorbutic, rheumatic, gouty and calculus.

We now desire to use our knowledge of pathogenesis and morbid anatomy upon the aggregation of organs before us. A physical inventory is made by the flash light of intelligence and medical acuity, and what can not be demonstrated is reached by exclusion.

I shall not attempt to enter into the labeling of diathesis, and proportioning the per cent. of material—aplastic, cacaplastic, or euplastic, nor argue excess, defect, or perversion, but desire to suggest that each individual is an incased diathesis or union of diatheses.

A knowledge of the origin and development of pathological processes, and of the changes in the tissues and fluids of the body. appreciable to the naked eye, or with the aid of the microscope, in connection with the land-marks of each diathesis, its peculiar language and manifestations, enables the careful observer to differentiate. The acme of our investigation, the supreme object—treatment is to be named, maimed or reclaimed.

An error in diathesis means negation in pathogenesis and morbid anatomy. An encephalic chaos, more chagrining because of knowledge possessed but mis-applied. To reason connectedly, conclude correctly, treat scientifically, cure naturally, we must encompass the relationship among pathogenesis, morbid anatomy and diathesis.

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REPORT OF COMMITTEE ON NECROLOGY.

In response to my request for mortality reports from County Medical Societies, Dearborn reported the death Dr. C. G. Walter, on June 2, 1895; Rush that of Dr. James B. Sparks, on August 23, 1895; Hancock, that of Noble P. Howard, August 25, 1895; Wabash, that of Dr. C. C. Brady, September 10, 1895; Fayette, that of Dr. Vincent H. Gregg, September 12, 1895; Miami, of Dr. Fred J. Crumbleton, November 2, 1895; Jennings, of Dr. Wm. F. Reiley, November 21, 1895; Grant, of Dr. Justin P. Ross, January 1, 1896; Rush, of Dr. E. H. Crippen, January 8, 1896; Rush, of Dr. John J. Inlow, January 24, 1896; DeKalb, of Dr. James N. Chamberlain, February 6, 1896; Elkhart, of Dr. Lemon W. Clark, February 8, 1896; Clark, of Dr. David McClure, February 16, 1896; Marion, of Dr. Charles N. Metcalf, March 10, 1896; Washington, of Dr. H. D. Henderson, March 11, 1896; Boone, of Dr. Matthew H. Bonnell, March 23, 1896; Vanderburg, of Rufus M. Corlew, March 23, 1896; Marshall, of Dr. T. T. Linn, March 24, 1896; and Miami, of Dr. Lewis M. Linville, March 31, 1896; making a total of nineteen of our guild who have answered the final summons since our last convocation. Twelve of these deaths occurred in 1896, three in January, three in February, and six in March, but no death has been reported in either April or May. Beside the sixteen counties reporting the nineteen deaths twenty other counties have reported no deaths, leaving thirty-seven counties which made no report of any kind. The obituaries herewith submitted are arranged chronologically according to the respective dates of death, and are returned as prepared by their respective authors.

Respectfully submitted,

JAS. F. HIBBERD,

Committee on Necrology.

Fort Wayne, Ind., May 28, 1896.

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C. G. WALTER, M. D.

MEMBER OF DEARBORN COUNTY MEDICAL SOCIETY.

BORN IN 1820, IN GERMANY.

DIED JUNE 2, 1895, AT LAWRENCEBURGH, IND.

Dr. C. G. Walter was born in Germany in 1820, died in Lawrenceburgh, Ind., June 2, 1895. He was educated in the schools of his native country, in both literary and professional studies under instructors at Berlin and Rostock. He immediately began the practice of his profession in the city of Berlin. In 1852 he immigrated to the United States, and located in Cincinnati, Ohio, but remained there only two years, when he removed and located in Lawrenceburgh, Ind., and secured an excellent practice, and by frugality and economy left a clever competency. Dr. Walter was a close student, and a good physician. Was a member of the Dearborn County Medical Society, also of the Indiana State Medical Society.

Dr. Walter was a kind husband and an affectionate father.

(Prepared by J. D. Hatch, S. B. Chambers, John W. House, Committee.)

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JAMES B. SPARKS, M. D.

MEMBER OF RUSH COUNTY MEDICAL SOCIETY.
BORN JUNE 15, 1833, AT NICHOLASVILLE, KY.
DIED AUGUST 23, 1895, AT CARTHAGE, IND.

He attended the schools of his native town and in the course of time entered the Transylvania Medical college at Lexington, graduating from that institution with high honors in 1854. He then located at Duncanville, Ky., and practiced his profession until 1862, when he enlisted in the Nineteenth Kentucky Volunteer Infantry as first lieutenant. Afterwards he was surgeon and served in the hospital until his health gave way. At the close of the war he settled at Harrodsburg, remaining at that place until 1868, when he removed with his family to Knightstown, this state. After a residence of three years in the latter town he removed to Charlottsville, and in the fall of 1880, came to Carthage, where he resided an honored citizen until his death. He was married at Burgin, Ky., on August 14, 1855 to Harriet J. Johnson. Ten children were born to them, five of whom, together with the beloved wife and mother survive him. He was a life long member of the Methodist Episcopal church, and a consistent christian and earnest church worker. As a physician he was known for miles around as a man who treated rich and poor alike. When called upon he went if it were possible and labored hard to save life or limb. He was much loved by his patients who always had great confidence in his skill. He was a member of the County, District and State Medical Societies, a republican in politics and a member of the Masonic Fraternity.

(Prepared by J. A. Sepe, M. D., Carthage, Ind.)

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NOBLE P. HOWARD, Sr., M. D.

MEMBER OF HANCOCK COUNTY MEDICAL SOCIETY.
BORN SEPTEMBER 11, 1822, IN WAYNE COUNTY, OHIO.
DIED AUGUST 25, 1895, AT GREENFIELD, IND.

Dr. Howard came with his widowed mother to Indiana in 1836. He received his education in the public schools of Brookville, Franklin County, Indiana. He began the study of medicine in 1840 in the office of Dr. H. G. Sexton, of Rushville, and made rapid advancement. In 1843 he began the practice of medicine in Greenfield, where he continued to reside and practice until his death. Dr. Howard held diplomas from both the College of Physicians and Surgeons and the Indiana Medical College of Indianapolis. In 1877 he was vice president of the State Society, and he has served as president of the County and District societies.

Dr. Howard was commissioned assistant surgeon of the Twelfth regiment, Indiana volunteers in October, 1861, and served on the campaigns through Maryland and Virgina during his time of enlistment. On the reorganization of the regiment he was recommisioned but declined. He was deputy collector of Internal Revenue for eight years.

In politics Dr. Howard was a whig in the days of that party and an earnest Union man during the Civil war. After its close he voted with the republican party until the nomination of Horace Greeley for president, since which time he has been an ardent democrat. He was a member of the Independent Order of Odd Fellows from 1856, and was at one time a member of the M. E. church.

Dr. Howard was married in 1844 to Miss Cinderella J. Gooding, and to them were born four children, three of whom survive him. His wife died in 1892. Dr. Howard was a man of very positive character and great energy. He served his patients with zeal and discretion and won a large patronage and universal esteem. For many years he did all the surgery in his vicinity and many of his operations showed unusual skill and courage. He was true to his friends, but a man to be feared by his opponents. He left a large estate acquired wholly by his energy and business ability.

His funeral was conducted by the I. O. O. F. His death was very sudden but not unexpected as he had been in poor health for about two years.

(Prepared by C. K. Bruner, M. D., Secretary, Greenfield, Ind.)

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C. C. BRADY, M. D.

MEMBER OF WABASH COUNTY MEDICAL SOCIETY.
BORN FEBRUARY 21, 1852, IN WABASH COUNTY, IND.
DIED SEPTEMBER 10, 1895, AT LINCOLNVILLE, IND.

Dr. C. C. Brady worked on a farm and attended the County schools in the winter until eighteen years of age, when he commenced teaching, and attended two summer terms of school at the South Wabash Academy. Commenced the study of medicine with Dr. T. R. Brady, of Lincolnville, Ind., in 1877; having no means except what he earned by his own efforts as teacher and farm laborer, did not finish his medical education until 1881, when he graduated with the honors of his class at the Hospital college, Louisville Ky.; was elected Interne at one of the hospitals, but for lack of means and being some in debt, declined the honor and commenced practice at Roann, Wabash county, but soon removed to Gilead, Miami county, and formed a partnership with Dr. Augustus Case of that place. Continued in active practice there until the winter of 1886 and 1887, when he bought the residence of his cousin, Dr. T. R. Brady, at Lincolnville, Ind., and there followed his profession until his death, September 10th, 1895, of typhoid fever. During an epidemic of diphtheria in the fall of 1891, he became infected with the disease, followed by a paresis of the pneumogastric nerve, and at that time nearly succumbed and never entirely recovered his former health. His nervous system early yielded to the fever poison and his life was soon snuffed out. Dr. Brady was in every sense a self made man. By his own efforts he attained good rank as a man of letters and a well read and skillful physician. No better informed man, on general principles, was to be found in the country. Never robust and vigorous, energy and pluck carried him to the top round, and at the early age of forty-three years, six months and twenty-one days he laid down his life, his armor well on, leaving a wife and three children, one girl and two boys, and a wide acquaintance to mourn his sudden taking off.

By order of the Wabash County Medical Society.

(T. R. Brady, M. D., Committee, Wabash, Ind.)

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VINCENT H. GREGG, M.D.

MEMBER OF FAYETTE COUNTY MEDICAL SOCIETY.
BORN JANUARY 25, 1825, IN BRECKEN COUNTY, KY.
DIED SEPTEMBER 12, 1895, AT CONNERSVILLE, IND.

Dr. Gregg's parents, Joseph M. and Matilda (Hamilton) Gregg were born in Kentucky, where the father died in 1838. Dr. Gregg was educated at a select school at Beechy Grove, Kentucky. In 1844 the family moved to Rush county, Indiana, where the subject of this sketch followed farming and stock raising.

He was married in 1847 to Miss America Justice, youngest daughter of Joseph Justice, a prominent family of Fayette county, whose ancestors belonged to the loyal patriots of the Revolution. He studied medicine under Dr. W. W. Taylor, of Vienna, (now Glenwood) where he began to practice in 1852. He removed to Connersville in 1858 and established a large and lucrative practice. In March, 1864, he was appointed surgeon of the 124th regiment Indiana Volunteer Infantry, and was with General Sherman's army in Georgia. During this campaign he was promoted to the rank of major and appointed surgeon of First Brigade, first division 23rd Army Corps, and remained with the command until the end of the war. He was apointed Internal Revenue Assessor in 1869, and held the office nearly three years. Dr. Gregg was a member of the G. A. R., Fayette County Medical Society, District Medical Society, Indiana State Medical Society, and the American Medical Association. He was a man of untiring energy and great kindness of heart. Forty-three years of his life were spent in the active practice of his profesion. A few months previous to his death he was confined to his home with valvular disease of heart, the result of rheumatism contracted in the army. As a soldier and as a physician he did his part well and will be remembered in the long years to come as one who was faithful to his trust.

(Prepared by S. N. Hamilton, M. D., Connersville, Ind.)

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THOMAS M. TUCKER, A. M. M. D.

MEMBER OF WASHINGTON COUNTY MEDICAL SOCIETY.
BORN AUGUST 25, 1828, AT NEW PHILADELPHIA, IND.
DIED OCTOBER 19, 1895, AT SALEM, IND.

Dr. Tucker was a son of James and Sarah (Houston) Tucker, who were natives respectively of Georgia and Kentucky. They were well known and highly respected people and members of the Presbyterian church. Young Thomas worked on his father's farm and attended district schools until nineteen years old, then Washington county Seminary at Salem. Later he entered Hanover college which graduated him in 1855.

He then studied medicine with Dr. Fishback, of Shelbyville, Ind., and attended lectures at the Ohio Medical college, of Cincinnati, from which he received his degree as "M. D." in 1860. For four years he practiced his profession at New Philadelphia, then moved to Salem, where he continued practice three years longer. In 1867 he moved to Kossuth, Washington county, Ind., where he carried on a very large and extensive practice until 1883, when he again moved to Salem, Ind., and did an active practice until his death. He was always a close and careful student and widely read on all subjects as well as medicine. He had a large consultating practice and was widely known as an expert witness in court testimony. In Dr. Tucker the poor always had a friend He was never known to refuse his service to any one because they could not pay.

He was married to Mary Burcham in 1862, who survives him with six children. Dr. Tucker all his life was a devoted church and Sunday school worker and always known to be an honest upright moral man.

No more indulgent or loving husband and father could be desired and he will long be remembered not only by the family which survives him, but, by the people of Washington county, many of whom have been recipients of his services and kind deeds.

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FRED J. CRUNKLETON, M. D.

MEMBER OF MIAMI COUNTY MEDICAL SOCIETY.

BORN JANUARY 16, 1869, AT GREENCASTLE, PA.

DIED NOVEMBER 2, 1896, AT PERU, IND.

Dr. Fred. J. Crunkleton was born in Greencastle, Pa., January 16, 1869. He received his early education at LaGro, Ind. After graduating at the High school of that place he taught school for three years, and then decided to study medicine. He entered the Indiana Medical college at Indianapolis, Ind. The following year was spent in the college of Physicians and Surgeons at Chicago. He took the third year work at the Hospital College of Medicine at Louisville, Ky., from which place he graduated in 1892. He received three gold medals for the best standing in surgery, obstetrics and gynaecology, and the appointment of house physician to the Louisville City hospital for one year. He located at Bunker Hill and practiced for two years and then moved to Peru. at which place he died November 2, 1895, from heart disease. On December 29, 1891, Dr. Crunkleton was married to Miss Lorene Reynolds. of LaGro, Indiana.

(Prepared by L. O. Malsbury, M. D., Secretary Miami County Medical Society, Peru, Ind.)

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WILLIAM F. REILEY, M. D.

MEMBER OF JENNINGS COUNTY MEDICAL SOCIETY.

BORN APRIL 21, 1828, AT ALEXANDRIA, KY.

DIED NOVEMBER 21, 1895, AT DECATUR, IND.

When he was nine years old his parents removed from their Kentucky home to a farm a few miles south of Greensburg, Indiana. His literary education was completed in the Decatur county Seminary, after which he taught in the country schools for a few years, employing the intervals in studying medicine with Dr. William Armington, one of the best known of the pioneer physicians of the county. This study he supplemented by a course in the medical department of the University of Michigan at Ann Arbor, and subsequently completed the course in the Ohio Medical college at Cincinnati, graduating there in 1358.

Soon after his graduation Dr. Riley located in Brewersville, Jennings county, and established a practice which he retained after his removal from that place.

In November, 1859, he removed to Sardinia, Decatur county, Ind., six miles from his first location. Here he soon established a large and lucrative practice.

Dr. Riley's parents were strict Baptists and trained their children carefully by precept and example. One of the beautiful traits of his character was his reverent tenderness for his father and mother.

He was always a man of fine presence and dignified bearing.

On February 8, 1859, he was married to Sarah Elizabeth Hood, daughter of the honored William Hood and his wife Isabella (Blair) Hood, of Decatur county.

Two daughters were the fruits of their marriage.

He was ever a friend to the poor and struggling.

He was an enthusiastic friend to education and all public enterprises, giving to them liberally of his time and money. He loved his home and gave much thought to its improvement and adornment, making of it a hospitable and restful retreat.

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He was indeed a man of the people and for the people, and when in 1876, he offered himself as candidate for state senator from the district embracing the counties of Scott, Jennings and Decatur, he was elected by a good majority. While in the senate he was appointed by the lieutenant-governor as chairman of the committe on elections, serving also on the congressional committee and other committees.

Although interested in politics and the interests of his country, he loved better than anything else his chosen profession. When in the prime of life and active in professional service he excelled in diagnosis and in the treatment of fevers peculiar to the section of country in which he lived.

For several years declining health compelled the doctor to give up much of his active practice; but in more recent years his health had improved and he had recovered much of his former elastic step, yet he had studied his own tendencies so well that he was convinced he had not long to live, and that he should die of paralysis.

With more than his ordinary punctilliousness he had arranged all of his worldly affairs so that he could scarcely have been more ready for the summons.

On the 20th of November it came. While driving to visit a patient he was stricken with paralysis in his buggy several miles from home. His horse found its way home and he was cared for by his friends and neighbors He rallied somewhat from his first stroke and was stricken again in the afternoon. After the second stroke he suffered terribly, continuing unconscious until death claimed him at noon the next day.

He was a member of the orders of Knights of Phythias and Odd Fellows.

The mortal remains of our beloved friend, were interred in the family lot in the Greensburg cemetery on November 25, beside those of the infant daughter placed there so long ago, the physicians of Greensburg acting as pall-bearers.

(Prepared by Dr. W. H. Stemm, Secretary North Vernon, Ind.)

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JUSTIN P. ROSS, M. D.

MEMBER OF GRANT COUNTY MEDICAL SOCIETY.

BORN, 1840, IN OHIO.

DIED JANUARY 1, 1896, AT MARION, IND.

At an early age Dr. Ross came with his father to Indiana. His literary training was received at the common schools.

He read medicine with Dr. A. D. Kimbal, and graduated at Rush Medical college, Chicago, Ill., class of 1868.

For nineteen years he practiced his profession at Wiliamsport, Ind., desiring a broader field he moved to Marion, Ind., where he continued in the practice till the Master said, well done.

He was a faithful member of Grant County and Indiana Medical Societies. He was a 32 degree Mason and a member of the I. O. O. F.

Dr. Ross married twice, and a wife, son, and daughter remain to mourn the loss of husband and father.

He was a man of strong convictions, deliberate, a popular physician, an honest man and a patriot.

Dr. Ross died of epithelioma in the fifty-sixth year of his age. "Requiescat in pace."

(Prepared by C. C. Cronkhite, M. D., Marion, Ind.)

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E. H. CRIPPEN, M. D.

MEMBER OF RUSH COUNTY MEDICAL SOCIETY.
BORN JULY 29, 1833, IN NEW YORK.
DIED JANUARY 8, 1896, AT MILROY, IND.

He came to Indiana with his parents when he was six years old and located in Bartholomew county, near Elizabethtown. When fifteen years old he went to make his home with Dr. Boynton, of Elizabethtown with whom he afterwards read medicine. He graduated from the medical department of the University of New York in 1856, and also attended one course of lectures in the Ohio Medical college during the session of 1858 and 1859. Dr. Crippen located in Moscow, Rush county, 1859. He spent most of his professional life in Rush county, Ind.

He loved his profession above everything else—always was well furnished with the latest and best medical literature. He was not a loafer but could always be found among his books when not engaged in the active duties of his profession.

Dr. Crippen was married three times, by his second wife he had three children, two of whom survive him, viz. Mr. E. E. Crippen, of Waldron, Ind., and Mrs. Mate Arnold, of Indianapolis.

(Prepared by S. C. Thomas, Milroy, Ind.)

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JOHN J. INLOW, M. D.

MEMBER OF RUSH COUNTY MEDICAL SOCIETY.
BORN FEBRUARY 13, 1826, IN FLEMING COUNTY, KY.
DIED JANUARY 24, 1896, AT MANILLA, IND.

He was a motherless boy from his earliest childhood being raised by his paternal grand father. His education was such as to be derived from subscription schools incident to that time in Kentucky. When approaching the years of his majority he spent one year in Flemingburg Academy. Thus he received a common school education. In 1846 he began the study of medicine under Dr. E. O. Bell, where he continued until the fall of 1842 under the care of his chosen preceptor. At this time he attended the Ohio Medical college—49-50. Thence he returned to his native county, locating at North Mills. He began the practice of his profession, remaining until near the close of the year 1851. The first day of January, 1852, he opened an office in the village of Manilla, Rush county, Indiana. Here he remained until the close of his successful life. He was a solid general practitioner of medicine, maintaining the code of his profession. Being a man of steady fixed purposes, he continued stedfast in all he professed to believe and advocate in science, politics, morals and religion. So he spent a life worthy of imitation by all who knew him. On June 28, 1853, he wedded Miss Mary T. Mull, who survives him.

(Prepared by John Moffett, M. D., Rushville, Ind.)

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PHILLIP P. WHITESELL, M. D.

MEMBER OF HAMILTON COUNTY MEDICAL SOCIETY.

BORN DECEMBER 4, 1823,

DIED JANUARY 27, 1896, AT CLARKSVILLE, IND.

He was a native of Cincinnati, Ohio, and lived there with his parents until 1831, when they moved to Franklin county, Indiana, where they remained until he was fourteen years of age, when they moved to Marion county. At seventeen years of age he entered school at Madison, Ind., and remained three years. He then commenced the study of medicine in the office of Dr. H. B. V. Johnson, of Marion county, where he remained for three years, and afterwards finished his course in the offices of Dr. Bullard and Mears, of Indianapolis. In the spring of 1850 he located in Clarksville, Ind., where he has ever since followed his profession excepting about four years, during the war, most of which time was spent in the service; first as captain in Company E. 39th Indiana Infantry, and afterwards as surgeon in the 101st Indiana Infantry. After the war he practiced for a brief period in Noblesville, Ind., after which he returned to Clarksville, where he remained in active practice until he died. Dr. Whitesell was a member of his County, State and National Societies, in all of which he took great interests. The doctor was a genial companion, a generous and charitable citizen, and the poor called on him in sickness with as much assurance of kind attention as the rich. He was a prominent member of the Methodist church, and was a Christian gentleman. He died of pneumonia in the seventy-third year of his age.

(W. B. Graham.)

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JAMES N. CHAMBERLAIN, M. D.

MEMBER OF DEKALB COUNTY MEDICAL SOCIETY.
BORN MARCH 22, 1822, IN CAYUKA COUNTY, NEW YORK.
DIED FEBRUARY 6, 1896, AT WATERLOO, IND.

Dr. Chamberlain was the son of Samuel Chamberlain, native of Gettysburg, Pa., and Mercy (Cotton) Chamberlain, a native of Vermont. His father died in 1865 and his mother in 1881.

The doctor was educated in the common schools and academy in Cayuga, N. Y.

In 1844 he went to Ohio, at that time called the far west, and taught school in Richland and Huron counties. He began the study of medicine in 1845 and graduated at the Western Reserve Medical college, at Cleveland, Ohio, in 1849. He practiced medicine and surgery in Seneca and Richland counties Ohio, until the fall of 1853, when he located in Auburn, DeKalb county, Ind., where he pursued the profession of his choice with zeal and energy. His skill and professional success in connection with social qualities gave him a popularity, which few have ever been able to attain. His energy, prompt decision and correct judgment so impressed his fellow citizens that, without his solicitation he was in 1860 elected sheriff of DeKalb county, and served faithfully in this official position as he did always in every place of trust to which he was called.

His patriotism and loyality to his country, in keeping with every characteristic of his life, asserted itself whenever occasion required and in the early part of 1865 he entered the service of the United States as surgeon of the 152nd Indiana Volunteer., where he served with ability until the close of the war. Upon his return from the army he located in Waterloo, DeKalb county, Ind., where he devoted the remainder of his life to the practice of his profession.

For many years he was surgeon for the L. S. & M. S. R. R. Co., who highly estimated his ability and services.

He was a charter member of the DeKalb County Medical Society,

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whose meetings he seldom failed to attend and was always willing to extend safe and kindly counsel to his younger and less experienced brethren. He usually held some official position in this society and for many years was its president.

He was twice married; the first time March 29, 1849, to Catharine H. Brink. To this union four children were born, two of whom survive him. The mother of these children died March 26, 1861. In 1862 he married Sarah Thomas. To this union three children were born, two of these with there mother also survive to mourn their loss.

The doctor's life was an open book of professional, moral and religious purity. He was a faithful member of the Presbyterian church. In his decisions he was positive, ingenuous and frank, but always genial, discreet and charitable.

His funeral was attended by a vast multitude of people, whose faces gave proof of deep sorrow. Members of the DeKalb County Medical Society performed the sad rite of bearing his remains to their final resting place in the Waterloo cemetery. He will be long remembered by all who knew his noble qualities.

(Prepared by Dr. A. B. Darby, Waterloo, Ind.)

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LEMON WILLARD CLARK, M. D.

MEMBER ELKHART MEDICAL SOCIETY.
BORN AUGUST 1, 1858, IN NOBLE COUNTY, IND.
DIED FEBRUARY 8, 1896, AT ELKHART, IND.

Dr. Lemon Willard Clark died of apoplexy February 8, 1896, at 8 a. m. He had attended his calls up to the day of his death. On the evening of February 6 he attended the meeting of the Elkhart County Medical Association, and complained of not feeling well. Nothwithstanding his indisposition and the entreaties of the members of the association that he sit down while speaking, he insisted upon standing up, and took a very active part in the discussions.

Dr. Clark was the son of Mr. and Mrs. John S. Clark, and was born August 1, 1858, in Noble county, Indiana. When he was three months old the family moved to Kosciusko county. His early education was received in the country schools of Kosciusko county. Later he attended the Warsaw High school, and still later Jefferson Academy. His medical education was received at Rush Medical college from which institution he graduated February 21, 1882. The doctor practiced at the following places: Brimfield, Ind.; Sevastopol, Ind.; Burket, Ind.; Ansonia, Ohio; Marion, Ohio; Philadelphia, Pa.; and Elkhart, Ind. He was married to Miss Leota Brown May 13, 1883, at Cincinnat, Ohio. His wife and one child, a boy of ten years, survive him. He was a member of the Odd Fellows, the Maccabees, and the Knights of Phythias, and joined the Methodist Episcopal church six weeks before his death Dr. Clark took a very active part in the transactions of our county society.

(Prepared by Metius M. Eckelman, M. D. Secretary Elkhart County Medical Association, Elkhart, Ind.)

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DAVID McCLURE, M. D.

MEMBER OF CLARK COUNTY MEDICAL SOCIETY.
BORN MARCH 17, 1815, AT ALLEGHENY, N. Y.
DIED FEBRUARY 16, 1896, AT JEFFERSONVILLE, IND.

Dr. McClure located in New Frankfort, Scott county in 1839, and was elected to the legislature in 1843, and re-elected in 1854. In 1856 he was elected senator from Scott and Jackson counties. In 1864 he located in Jeffersonville and from that time until five years ago he was in active practice, having a large clientele. In 1880 he was elected Joint Representative from Clark, Floyd and Scott counties. In 1882 he served in the senate from Clark and Scott, and in 1886 he served again in the senate from Clark and Jefferson counties. Dr. McClure was educated at the medical college of Albany, New York in 1838. He was a man of fine ability and was ever held in high esteem by the members of his chosen profession. Five yers ago he became blind, his hearing also became impaired, but he was patient and hopeful.

He was a member of Clark lodge No. 40, F. and A. M., and was buried with the honors of Masonry. Rev. Dr. Adams, the Episcopal rector conducted the services of that church at the house and at the grave. The surviving children are Mrs. Thomas Sparks, Drs. Clarence and Sidney McClure.

(Written by J. Truman Davis, M. D., Secretary Clark County Medical Society.)

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CHARLES N. METCALF, M. D.

MEMBER OF MARION COUNTY MEDICAL SOCIETY.
BORN APRIL 25, 1846, IN HERKIMER, N. Y.
DIED MARCH 10, 1896, AT INDIANAPOLIS, IND.

Dr. Charles N. Metcalf died of pneumonia March 10th at his home, 186 Senate avenue, north. Dr. Metcalf had not been in the best of health for several years, but it was only the Saturday before his death that he became so ill that he had to take to his bed. His youth was spent on a farm. His early education was received in the country schools. He was a graduate from Fairfield Academy, at Fairfield, N. Y., and afterward entered the medical department of Michigan Uuiversity at Ann Arbor. After his graduation he moved to Eaton Rapids, Mich., where he began practice. After a residence there of three years he moved to Indianapolis. In 1877, while at Eaton Rapids, he was married to Miss M. C. Montgomery. Dr. Metcalf was a member of the Odd Fellows, the Masons and the Elks. He was nominated by the democracy of Marion county for coroner in 1878, but was defeated.

He was appointed secretary of the State Board of Health in 1883, a position which he resigned recently, his resignation to take place on May 1st.

The Marion County Medical Society, March 10th, appointed a committee, F. Heath, Drs. C. E. Ferguson and L. Cline, which formulated the sorrow and expressed the condolence of the society.

Dr. Frank C. Ferguson cared for Dr. Metcalf in his final illness.

(Prepared by T. B. Noble, M. D., Indianapolis.)

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HARVEY DINWIDDIE HENDERSON, M. D.

MEMBER WASHINGTON COUNTY MEDICAL SOCIETY.

BORN SEPTEMBER 6, 1819.

DIED MARCH 11, 1896, AT SALEM, WASHINGTON COUNTY, IND.

His fathers family removed from Pennsylvania to Kentucky, and then to Indiana, in 1814, where the subject of this sketch was born.

His mother's family were the noted Dinwinddies, of Virginia.

His boyhood life was spent in Salem, where he obtained his elementary education. His first labor was that of a printer, on the Indianapolis Journal, in 1835, and after many trials as a young man thrown on his own resources, trying to obtain an education, he began the study of medicine in Salem, with Dr. Samuel Reid, in 1839.

After two years of study at the Transylvania University, medical department, Lexington, Ky., he graduated with honors in his chosen profession of medicine, March 10, 1842.

He was a charter member of the Washington County Medical Society, organized June 18, 1852, and of the Indiana State Medical Society; also was a member of the American Medical Association, since its organization, always being a strict ethical practitioner.

He was progressive in all his views, unprejudiced, and a successful physician.

Having retired from active practice, he assisted in the organization of the Citizens Bank in 1889, being active in its management, and on account of failing health resigned its presidency in 1895, but was a director at the time of his death.

Generous, charitable, and strictly honest, he was loved and honored by all at the time of his death.

(Prepared by Dr. J. P. Henderson, Chicago, Ill.)

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MATTHEW H. BOUNELL, M. D.

MEMBER OF BOONE COUNTY MEDICAL SOCIETY.
BORN NOVEMBER 12, 1822, IN BUTLER COUNTY, OHIO.
DIED MARCH 23, 1896, AT LEBANON, IND.

He leaves a wife and four children, Dr. T. A. Bounell, New Brunswick, Indiana, Miss India Bounell, a trained nurse, Lebanon, Indiana, Dr. Harry Bounell, Waynestown, Indiana, and Dr. E. Guy Bounell, Indianapolis, Indiana. He was twice married, September, 1844, to Mary L. Kilgore, of Clinton county, Indiana, and in 1863 to Elizabeth Heath. Lafayette, Indiana.

His primary education was obtained in an old log school house, Clinton county, Indiana, later in the Frankfort schools with one year of higher work in the Asbury University, Greencastle, Indiana.

Having decided to study medicine he took the usual course of office study of the times and then entered Rush Medical college, Chicago, and in 1847 begun the practice of medicine in Lebanon, Ind.

In 1851 he located in Yountsville, Montgomery county, Indiana, where he practiced ten years having in the meantime graduated from Rush Medical college in 1852.

In 1861 he returned to Lebanon and resumed the practice, and was thus engaged until 1863, at which time he raised company G, 116th Indiana Infantry, being elected and commissioned captain, when the company was organized. Later he was made major-surgeon of the regiment and for some time acted as post-surgeon at Taswell, Tenn., and was also, for a limited period, surgeon of the brigade. On returning from the service he resumed the practice of medicine and surgery in this city and at his farm a few miles out until his death as above stated.

Dr. Bounell's professionall trend was decidedly toward surgery in which he was successful, having performed many of the pioneer operations of his day and was of the earliest to perform Supra-public Cystotomy when it was in no wise an established operation.

He was in church relations a Methodist, in politics a republican, and in fraternal associations a Mason and Knights-Templar.

Dr. Bounell was a member of the Boone County Medical Society, of the Indiana State Medical Society, and of the A. M. association.

Thus closes the life of another pioneer in medicine.

(Prepared by Carter H. Smith, Lebanon, Ind.)

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RUFUS M. CORLEW, M. D.

MEMBER OF VANDERBURGH COUNTY MEDICAL SOCIETY
BORN AUGUST 22, 1843, IN MONTGOMERY COUNTY, TENN.
DIED MARCH 23, 1896, AT EVANSVILLE, IND.

Dr. Corlew studied medicine with Dr. B. W. Ursey, of Montgomery county, Tenn., and graduated at the Nashville college, 1868; practiced medicine three years in Tennessee, then located in Evansville, where he remained in active practice to the day of his death.

The last six years of his life were years of disease and suffering. He traveled much during that time, went to Europe in search of health which he never found though he was ambitious and died with the medical harness on. He married Miss Sallie A. Batts in 1868, and his widow and three daughters survive him.

He was a member of the Indiana State Medical Society, was a member of the Masonic fraternity and was buried according to the ritual of that order. At a meeting of the Vanderburgh County Medical Society a committee consisting of Drs. Hayden, Powell and Cottingham was appointed, who paid the following tribute to his memory:

"Resolved, That the Vanderburgh County Medical Association has lost one of its most active workers and the profession one of its most honored members; and the intimate relations he has always held with the members of this association render it appropriate that we express our appreciation of his valuable services."

The cause of his death was a complication of diseases of the liver, heart and digestive organs, aggravated by overwork.

In religious affiliation he was a Methodist and died a communicant of that church. He was generous, kind hearted and devoted to his friends, honorable and humane to his patients.

(Prepared by J. W. Compton, President, and Thomas Macer, Secretary Vanderburgh County Medical Association.)

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TIMOTHY T. LINN, M. D.

MEMBER OF MARSHALL COUNTY MEDICAL SOCIETY.
BORN OCTOBER 31, 1891, IN WASHINGTON COUNTY, KY.
DIED MARCH 24, 1896, AT BOURBON, IND.

Dr. Linn, with his father moved to Marshall county, Ind., in the fall of 1836, and settled just north of where the town of Bourbon now stands. Sixty years have passed since they settled in the wilderness of Marshall county and commenced the realities of life in that little log cabin, which was afterwards changed for a beautiful home.

He attended the medical school at Ann Arbor, Mich., and afterward graduated from Rush Medical college, Chicago, Ill.

He was married to Eliza H. Stollard June 23, 1858, in the same house and in the same room where thirty-eight years later the doctor passed quietly away. For nearly forty years he has practiced medicine and surgery in Marshall county, Ind. As a physician and surgeon he was one of the best in the county.

He was a member of the Presbyterian church. As a citizen he was always loyal and benevolent, as a christian, true to his convictions of duty, loyal to his church and faithful in the discharge of his obligations.

(Prepared by J. H. Wilson, M. D., Plymouth, Ind.)

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LEWIS M. LINVILLE, M. D.

MEMBER OF MIAMI COUNTY MEDICAL SOCIETY.
BORN OCTOBER 30, 1860, AT COLUMBIA CITY, IND.
DIED MARCH 31, 1896, AT COLUMBIA CITY, IND.

Dr. L. M. Linville was born in Columbia City, Indiana, October 30, 1860. His boyhood days were spent there and his primary education was received in the public schools there. During the years '79 and '80 he attended college at St. Francis, Wis., where he fitted himself to enter the Michigan College of Medicine at Detroit, and graduated in the same in '83. He practiced with his father in Columbia City for awhile and then went west. He changed his location several times but finally located in Peru, where he was doing a successful business at the time he was taken sick last January with typhoid pneumonia. He was taken to the home of his parents at Columbia City, where after a lingering sickness of eight weeks he passed away. He was a member of the M. E. church.

(Prepared by L. O. Malsburry, M. D., Secretary Miami County Medical Society, Peru, Ind.)

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THOMAS F. DRYDEN, M. D.

MEMBER OF HENDRICK'S COUNTY MEDICAL SOCIETY.

BORN OCTOBER 20, 1835, AT ABERDEEN, OHIO.

DIED MARCH, 1896, AT CLAYTON, IND.

Dr. Dryden came from Virginia to Indiana in 1852, and spent his time on a farm and attending the district school. He began the study of his chosen profession in the office of Dr. David Hutchinson, of Moonsville, Morgan county, Indiana in 1854. After pursuing his studies for two years he attended one course of lectures at Ann Arbor, Michigan, and a year later he attended one term at the Medical College of Ohio, from which he was graduated. He had been in the practice about two years at Northfield, Boone county, Ind., when the war of the rebellion came on. He immediately rode on horseback to his mothers home near Brooklyn, Morgan county, Ind., and a few days later he and five others of the neighbors boys reported at Morton camp, and were the first to enter camp from Morgan county.

On the organization of the 15th Regiment of Indiana Infantry, he was made hospital stewart, which position he held until the regiment was mustered out, but a considerable portion of the time he did duty as assistant surgeon and regiment surgeon.

He was in the battles of Rich Mountain, Shiloh, Murfreesboro, Mission Ridge and others. His regiment was mustered out June, 1864, and he was immediately appointed Post surgeon at Johnsonville, Tenn., remaining there until the close of the war. After the close of the war he located at Clayton, Hendricks county, where he has been engaged in the practice of medicine until near the close of his life. He was married in 1868 to Sarah E. Johnson, who died in 1872, leaving no children. It may truly be said of Dr. Dryden that he was a conscientious christian gentleman, that he was hospitable and kind, that he stood square on the code of medical etiquette. During these years he sustained himself in a large practice, and made an enviable reputation as a physician and surgeon.

(W. J. Hoadley, Secretary Hendricks County Medical Society.)

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TRANSACTIONS

OF THE

INDIANA STATE MEDICAL SOCIETY.

FORTY-SEVENTH ANNUAL SESSION

AT FORT WAYNE,

May 28th and 29th, 1896.

FIRST DAY.

MORNING SESSION.

PLYMOUTH CONGREGATIONAL CHURCH, FORT WAYNE, IND.

The President, Dr. Miles F. Porter, of Fort Wayne, called the society to order at 9 o'clock Thursday morning.

Prayer was offered by the Rev. Jas. S. Ainslie.

The Honorable Henry P. Scherer, Mayor of Fort Wayne, then made a brief address of welcome, complimenting the physicians upon the nobility and importance of their profession, and extending to them the hospitalities of the city.

Dr. H. Von Sweringen, of Fort Wayne, then made the address of welcome.

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DR. SWERINGEN'S ADDRESS.

Ladies and Gentlemen of the Indiana Medical Society:

On behalf of the Allen County Medical Society, of the Fort Wayne College of Medicine, and of all the physicians and surgeons of the City of Fort Wayne, and of Allen County, I extend to the Indiana State Medical Society a most cordial, heartfelt welcome.

The dentists, chemists, pharmacists and druggists are also represented with us in this cordial greeting to you; the pulpit, the press, and the bar of our city join us in these words of welcome; the St. Joseph and Hope Hospitals, every educational, benevolent and religious institution of Fort Wayne, together with her entire population, are helping with heart and hand to swell the grand chorus of welcome to the State Society.

After all that is said to the contrary, there is not so much difference in doctors, even in matters of theory and practice, as is generally supposed by the laity. The public, not always appreciating the fact that "there are doctors and doctors," is inclined to repeat the old chestnut that "doctors will differ;" but I am prepared to assure the Indiana State Medical Society that at least upon the question of desire to make its visit to our city pleasant and profitable, socially and professionally, the doctors of Fort Wayne and of Allen County are a unit.

We have grown in the last few years; we have evoluted; we have caught some of the inspiration of the day; an X ray from the grand truth of the Fatherhood of God and the Brotherhood of Man, has penetrated our hearts, and we are today at peace with ourselves and all mankind. The green-eyed monster has now no place among us; we can now weep with those who weep, and rejoice in the prosperity of our brethren.

With the noble denomination represented by this pulpit, by whose liberality we are permitted to assemble in this beautiful temple, we have discovered that the effort of the present generation is toward breadth of thought, feeling and action.

Narrow as are men's views and selfish as are their actions, yet there is that astir in them which makes them feel that they are not pigmies, that they have before them a wonderful destiny, that there

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is involved in their best efforts the germs of the fruit which will still be better, and which augurs everything for the future.

In the midst of even squalor and poverty, to say nothing of wealth and luxury, the masses are wrestling with this condition, and while they seem to neglect or to forget the power and the purpose of the uplift, while the circumstances of their life seem to depress them and keep them disturbed, yet they are beginning to realize the fact that the better way for them to live is along the line of this uplift.

We have become so handicapped and imprisoned by the material conditions which surround us, and out of which we are unwilling and often seemingly unable to arise, that even while the sun comes and goes and the stars shine above us, we catch but the rays which fall into the dimmed windows of our souls.

We are not lifted out of ourselves by the light of the majestic sun, nor filled with a sense of elevation and of feeling of ecstasy by the myriads of stars. Our eyes are befogged; our vision is too intensely earthly; our minds are pinched and confined; our hearts are galled by their selfish interests, so that this beautiful panorama of day and night, which might seem almost to move stones and trees to praise and admiration, touches and appeals to us in vain.

The physicians of Fort Wayne are getting away from this morbid view of life, this sinking down of man into his selfish self, and refusing to make the effort to do what he ought and what he knows that he should do, to make life worth living; it is this growing morbid and despondent over his lot, because he has blinded his eyes to the grand visions which conscience and reason have revealed to him —it is this view of life which is the crying evil of the times.

However true it is that doctors have differed, no class of people have had a greater admiration for the good, the beautiful and the true. I remember of hearing the lamented Professor Gross remark upon the reception of a pyramid of flowers, presented to him by his class, that "it was very difficult, if not impossible, for a lover of flowers, to commit a serious crime."

And so we believe that no man can really love the good without becoming good. This fact then, must account for the change of heart in the profession of Fort Wayne. We have learned to love the good, the beautiful and the true, and have, therefore, become

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more like the good men of our profession elsewhere throughout the State and Nation.

And this breadth of feeling and thinking grows in us as we live obedient to conscience, as we rise out of self-satisfaction, as we try to gather up the good in everything, as we reach forward toward purity of heart and wisdom of mind.

which awed me, and made me feel my own insignificance. Especially was this the case when I appeared before him for examination. ially was this the case when I appeared before him for examination.

As a lily silently yet truly fills a room with its sweetness and presence, so that its fragrance is borne in upon the mind, and men know it is not far from them, so noble and pure souls, whatever may be their lot, betray unconsciously the character and quality of their personality.

Man feels his own emptiness, selfishness and insignificance in their presence; and as one cannot stand near a lofty mountain without measuring himself by it, so the profession of Fort Wayne feel the need of more brotherly kindness, wisdom and strength, as it draws closely to the present occasion—to the meeting of the State Society.

Any man with an active mind, who has not entered into a state of lethargy, inertia or mental amblyopia, knows that he is the smallest and meanest when he thinks, feels and toils altogether for himself; when he seeks to make the world serve his own egotism and interests; when he lives an insulated life, regardless of the needs and happiness of his brother man. And this is the evil which enters so largely into the industrial, social, political and moral life of mankind, and which carries with it its own power of oppression and destruction.

And so the physicians of Fort Wayne are endeavoring to decorate and adorn their science, knowledge and wisdom with the good, the beautiful and the true; to associate true manliness with professional qualifications, thus rendering our code of ethics of no more use than as a relic of a past necessity.

And now we hope that the migratory plan you have adopted for the meetings of this society, of which the present meeting is the initial and experimental one, may convince you of its propriety and

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wisdom by the success which we hope will attend it upon the present occasion.

Let me again assure you that the profession of Fort Wayne is at your service. We desire to do your bidding. You have but to command and we obey. If you do not see anything you want, ask for it. The city is yours, as you have already been assured by its Honorable Mayor.

If, during your scientific labors, you feel that you could be refreshed by an occasional song, don't be backward about calling for our celebrated quartet, which our worthy President has dubbed "The Four Chlorides." They warble delightfully, and we are proud of them. There are also a number of our members who are elocutionists of no mean order, and will render some of the gems of our own beloved Hoosier poet, James Whitcomb Riley, if you so desire to intersperse your labors with poetry and song.

James Whitcomb Riley! He has written several gems true to nature, in relation to our profession. Would that I could tender to him an adequate welcome to this meeting. In the memory of the world, no "frost" will ever fall upon his "punkin'" and all his "fodder" will be "shocked."

Finally, everyone, to each and all, on behalf of the city and profession of Fort Wayne, I bid you welcome!

The Secretary, Dr. Kent K. Wheelock, called the roll of delegates from the County Societies, and also named the members of the nominating committee.

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DELEGATES TO THE INDIANA STATE MEDICAL SOCIETY, AMERICAN MEDICAL ASSOCIATION AND MEMBERS OF THE COMMITTEE ON NOMINATIONS OF THE INDIANA STATE MEDICAL SOCIETY:

COUNTY.	DELEGATES TO STATE SOCIETY.	DELEGATES TO AMERICAN MEDICAL ASSOCIATION.	MEMBERS OF NOMINATING COMMITTEE.
ALLEN.	J. E. Miller, M. A. Duemling, A. E. Bulson, Jr., G. C. Stemen, M. I. Rosenthal, D. E. Howe, J. M. Dinnen, B. Von Sweringen. W. P. Whery, S. H. Havice, F. W. Gavin, C. B. Stemen.	K. K. Wheelock, W. H. Myers, G. L. Greenawalt, Mary A. Whery, I. M. Rosenthal, J. E. Miller.	B. Von Sweringen.
BARTHOLOMEW.	A. J. Banker, A. J. McLeod, W. H. Butler,	A. J. Banker.	A. J. Banker.
BENTON.	Clark Cook, G. P. Crune, J. S. Mavity, alt., J. Colb, alt.		Clark Cook.
BLACKFORD.	P. Drayer, J. A. Morrison, C R. Mason,	C. Q. Shull, L. E. Maddox.	P. Drayer.
BOONE.	W. F. Batman, H. T. Cotton, A. P. Fitch, J. S. Hardy.	W. H. Schultz, D. R. Walker.	W. F Batman.
CARROLL.	W. F. Sharer, Wickliffe Smith.	J. N. Cochran	Wickliffe Smith.
CASS.	N. W. Cady, W. H. Bell. B. D. Bradfield, E. P. Gould.	A. Coleman, J. Z. Powell.	W. H. Bell.
CLARK.	Carl Jones, R. Hemig.	T. A. Graham.	
CLAY.	J. C. Gifford, J. F. Smith, T. A. Glasgo, R. H. Culbertson.	G. W. Finley, F. Nussel.	J. C. Gifford.

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DELEGATES—Continued.

County.	Delegates to State Society.	Delegates to American Medical Association.	Member of Nominating Committee.
Daviess.	H. Gers, C. C. Melown.		
Dearborn.	W. C. Henry, A. J. Bowers, F. H. Sale, H. H. Sutton, R. C. Bond.	H. H. Sutton, J. W. House.	W. C. Henry.
Decatur.	W. H Wooden, G. S. Crawford,		G. S. Crawford.
Dekalb.	D. J. Swartz, J. A. Clevenger, J. E. Showalter, W. F. Shumaker.	C. S Stewart, F. M. Hines.	
Delaware.	T. J. Bowles, E. B. Mann, I. N. Tent, G. R. Green, F. G. Jackson, H. E. Corving, G. W. H. Kemper.	L. L. Ball, T. J. Bowles.	I. N. Trent.
Dubois.	V. Knapp, B. B. Brannock,	E. L. Lukemeyer.	
Elkhart.	W. A. Neal, W. F. Hani, M. M. Eckleman, C. H. Niman, W. E. Bowman,	J. A. Work, F. C. Eckelman.	W. E. Bowman.
Fayette.	S. N. Hamilton, L. D. Dillman	Joshua Chitwood.	
Floyd.	E. P. Easley, G. H. Cannon.	J. F. Weathers, W. L. Starr.	E. P. Easley.
Fountain.	George S. Jones, F. E. Sanders.	E. M. Fine.	F. E. Sanders.
Gibson.	F. Blair.		F. Blair.
Grant.	O. L. Stout, Wm. Flynn, M. T Shively, Charles Eckert, J. C. Knight, B. F Ludlow, L. H. Conley.		Wm. Flynn.

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DELEGATES—Continued.

COUNTY.	DELEGATES TO STATE SOCIETY.	DELEGATES TO AMERICAN MEDICAL ASSOCIATION.	MEMBER OF NOMINATING COMMITTEE.
GRANT.	L. J. Corey, C. C. Cronkhite, S. D. Aryes (Hon)		
GREEN.	W. H. Beatty, S. C. Cravens, H. R. Lowder.	W. H. Beatty, H. H. McCabe.	W. R. Cravens.
HAMILTON.	T. E Parr, V. E. Andrews.	M. C. Haworth.	T. E. Parr.
HANCOCK.	J. H. Justice. J. W. Selman, O. C. Neier, C. K. Bruner.	W. R. King. C. A. Barnes.	J. H. Justice.
HENDRICKS.	John A. Osborn, C. A. White, G. W. Seaton, C E. Farabee.	W. H. White, Marion A. Jessup.	W. T. Lawson.
HENRY.	H. Benedict, G. W. Burke, E. E. Kirk.	James Rea, G. D. Bailey.	G. W. Burke.
HOWARD.	J. W. Wright, J. B. Moore, Edgar Cox, E. K. Frierwood.	J. H. Ross, J. C. F. Thorne.	J. W. Wright.
HUNTINGTON.	W. F. Carson, H. C. Grinnell.	W. F. Carson.	E. Wright.
JACKSON.	H. A. Cummins, M. F. Gerrish, N. N. Shipman, W. E. Whitehead.	Albert May, James M. Shields	M. F. Gerrish.
JAY.	J. B. Garber, M. T. Jay, C. C. Mills, D. P. Murray, J. M. Bosworth,	G. W. Fertich, J. M. Bosworth, J. B. Garber.	J. B. Garber.
JEFFERSON.	Charles Ryker, J. H. Chrtstie.	C. C. Copeland.	J. H. Christie.
JENNINGS.	W. H. Stemm, J. H. Jones, C. W. Phillips, W. J. Mitchell, W. H. Richardson	J. H. Green, A. B. Light.	W. H. Stemm

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DELEGATES—Continued.

County.	Delegates to State Society.	Delegates to American Medical Association.	Members of Nominating Committee.
Johnson.	J. M. Wishard, L. L. Whitesides.	W. C. Hall, J. H. Lanam.	H. J. Hall.
Knox.	S. C. Beard, J. F. Somes, L. B. Staley, H. M. Smith, George Knapp.	H. M. Smith, J. F. Reeve, M. M. McDowell, W. H. Davenport,	H. M. Smith.
Kosciusko.	T. J. Shackelford. J. M. Bash, C. W. Burket, P. E. Terry.	I. J. Bicknell, P. E. Terry.	C. W. Burket.
Lagrange.	E. G. White, Jonh Dancer, F. P. Griffith, J. L. Short.	W. H. Short, John Dancer.	John Dancer.
Lawrence.	G. W. Burton, E. E, Mitchell, C. H Emery, C. Rariden, T. E. Stipp, J. B. Duncan.	D. McDonald, J. D. Byers.	C. H. Emery.
Madison.	J. R. Moon, J. B Fattic, Etta Charles, W. N. Heath, F. J. Hodges, Q. W. Brownback, F. P. Nourse, J. E. Hall.	W. W. Kneale, L. E. Alexander, C. N. Branch, Jr., T. O. Armfield.	F. J. Hodges.
Marion.	A. W. Brayton, G. J. Cook, J. O. Stillson, A. C. Kimberlin, A. Maxwell, L. L. Todd, L. C. Cline, D. A. Thompson, J. L. Masters, Theodore Potter, Jos. Eastman, Louis Burckhardt Guido Bell. H. A. Denson, W. N. Wishard, A. E. Sterne,	J. T. McShane, G. W. H. House, L. C. Cline, L. H. Dunning, H. O. Pantzer, G. V. Woolen, R. F. Stone, J. R. Brown, S. L. Ferree, A. W. Brayton, J. O. Stillson, E. R Lewis, E. C. Reyer, A. L. Wilson.	George J. Cook.

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DELEGATES—Continued.

COUNTY.	DELEGATES TO STATE SOCIETY.	DELEGATES TO AMERICAN MEDICAL ASSOCIATION.	MEMBER OF NOMINATING COMMITTEE.
MARION.	W. V. Morgan. E. D. Moffett, Martha J. Smith, L. H. Dunning, H. O. Pantzer, J. M. Bates, F. C. Woodburn, F. B. Wynn, J. H. Taylor, F. C. Heath, H. M. Lash.		
MARTIN.	W. H. Shirley.		W. H. Shirley.
MARSHALL.	J. W. Eidson, J. Kaszer, O. A. Ray, J. J. Hamilton.	S. W. Gould, A. B. Younkman.	J. W. Eidson.
MIAMI.	J. O. Malsbury, J. W. Moore, J. Spooner, H. V. Passage, W. H. Brenton, L. O. Malsbury.	J. O. Malsbury, L. O. Malsbury, J. Spooner.	H. V. Passage.
MONTGOMERY.	T. F. Leech.		T F. Leech.
MORGAN.	H. W. Cure, A. W. Reagan.	U. H. Farr.	H. W. Cure.
NOBLE.	John W. Hays, J. L. Gilbert.	J. W. Hays, N. Teal.	J. W. Hays.
OWEN.	Allen Pierson, W. H. Rice, J. S. Hinkle, H. A. Fox.	J. M. Stucky. B. Yocum.	Allen Pierson.
PARKE.	J. A. Goldsbury, C. C. Morris.	W. H. Gillum.	J. A. Goldsbury.
PERRY.	Wm. Cluthe, W. H. Muelchi.	C. M. Brucker.	R. H. Hutchison.
PIKE.	J. W. Coleman, W. H. Link.	J. R. Adams.	W. H. Link.
PORTER.	D. J. Loring, R. D. Blount.	D. J. Loring.	D. J. Loring.

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DELEGATES--Continued.

County.	Delegates to State Society.	Delegates to American Medical Association.	Member of Nominating Committee.
Putnam.	E. B. Evans, G. W. Poole, F. H. Lammers.	G C. Smythe, E. Hawkins.	G. C. Smythe.
Randolph.	L. N. Davis, Chas. McNaull, J. H. Moroney.	L. N. Davis. N. T. Chenowerth	H. P. Franks.
Ripley.	E. D. Freeman.	E. D. Freeman.	E. D Freeman.
Rush.	J. C. Sexton, F. G. Hackleman, C. H. Parsons. Don Kennedy,		J. C. Sexton.
Shelby.	T. C. Kennedy, C. J. Cook, D. F. Randolph, Sam Kennedy, J. W. Rucker, O. L. Adams.	W. G. McFadden, J. Bowlby, E. W. Leech.	Samuel Kennedy,
Steuben.	T. B. Williams, F. B. Humphreys C. M. Dolph.	T. F. Wood, H. D. Wood.	C. M. Dolph.
St. Joseph.	N. T. Montgomery C. A. Daugherty, J. B. Berteling. H. F. Mitchell, R. B. Dugdale. E. Lent.	H. D. Denant, A. E. Barber, C. M. Butterworth	H.T. Montgomery
Sullivan.	J. L. Durham.		
Switzerland.	Scott Culbertson, L. W. Bear.		
Tippecanoe.	G. F. Beasley, E. C. Davidson, G. F. Keiper. Geo. K. Throckmorton,	G. F. Keiper, W. S. Campbell.	G. F. Beasley,
Tipton.	N. W. Doan, M. L. Ploughe, T. W. Longfellow.	R. M. Recobs, M.V.B.Newcomer	M. L. Ploughe.
Vanderburg.	A. M. Hayden, Thomas Macer, C. L. Herrod,	E. Walker. A. M. Hayden, T. E. Powell,	A. M. Hayden.

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DELEGATES—Continued.

COUNTY.	DELEGATES TO STATE SOCIETY.	DELEGATES TO AMERICAN MEDICAL ASSOCIATION.	MEMBER OF NOMINATING COMMITTEE,
VANDERBURG.	J. C. LeHardy, Jr. C. P. Bacon, W. E. McCool, Edwin Walker, P. Y. McCoy, J. H. McCutchen.	J. W. Compton,	
VIGO.	W. O. Jenkins, W. Schell, J. E. Link, Ch. Wyeth, S. J. Young, T. C. Hood, E. A. Aikman, Jas. Brunker, W. C. Eichelberger, L. J. Weinstein.	J. P. Worrell, W. C. Eichelberger, G. W. Crapo, B. F. Swafford, W. R. Mattox.	L. J. Weinstein
WABASH.	H. C. Mooney, T. R. Brady, L. J. Smith, J. H. Ford, L. W. Smith.	Henry Ader, A. J. Smith.	L. W. Smith.
WARRICK.	T. B Jones, W. H. Mills.	P. N. Hoover, C. J. Keegan.	T. B. Jones.
WASHINGTON.	H. C. Hobbs.		J. J. Mitchell.
WAYNE.	G. H. Grant, J. F. Hibberd, Ch. Marvel, Sarah J. Morrow.	J. F. Hibberd, H. H. Weist.	G. H. Grant.
WELLS.	H. H. Weer, L. A. Spalding, F. W. Garrett.	G. E. Fulton, H. H. Weer.	L. A. Spalding.
WHITE.	W. O. Walker, J. Madaris.	J. H. Reed, J. W. Noland.	W. O. Walker.
WHITLEY.			N. I. Kithcart.

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Many of these responded to their names as they were read.

At 9:35 a. m. some 80 members were in attendance.

Upon suggestion of Dr. Brayton a stenographer was sent for, to report the proceedings. None was present, as the Committee of Arrangements was under the impression that a stenographer would be brought from Indianapolis, although no arrangement to that effect had been made with the Committee on Publication. (It may as well be stated here that all the notes of the proceedings are taken from the long hand notes made by Dr. Brayton, for the June number of the *Indiana Medical Journal*, except those of the closing session, which were prepared by Dr. A. E. Bulson, Jr., editor of the *Fort Wayne Medical Magazine*, for publication, and that such notes as appear in this volume have been already published conjointly in the June issue of the *Indiana Medical Journal* and the June number of the *Fort Wayne Medical Magazine*. The notes taken by the stenographers possible to secure on short notice, were not intelligible, as they were not accustomed to the kind of work. For this reason the discussion of papers, which would have amounted to some 50 pages or more, are lost to the society. The Committee on Publication regret this, as the discussions were often of a high order of merit, and many questions were raised by the essayists and left open for discussion and summarizing by the author. It should be stated, however, that the publication of these discussions would have necessitated the further enlargement of the papers and proceedings. The committee has cut the matter down to meet the order of the society, that the book should not exceed the limits of the money on hand, which permitted the publication of a book of 375 pages.

A. W. BRAYTON,
Chairman of Committee on Publication.)

Dr. Albert E. Bulson, Jr., presented the Report of Committee of Arrangements.

FORT WAYNE, IND., MAY 28, 1896.

Your committee on arrangements for 1896 respectfully submits the following report:

On March 25, a preliminary announcement was sent to each member of the state society, announcing the date of meeting, requesting

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the titles of papers to be read be sent to the committee, giving date when a complete program would be sent out, announcing the meeting of the American Medical association and manner of obtaining credentials for the same, etc., etc.

On May 1st, letters were sent to many prominent members, asking that they allow their names to appear upon the program to discuss papers, and requesting that the committee be notified as to the subject desired for discussion.

On May 10th, all members appointed by the committee to open discussions, were notified that their names would appear upon the program, and were given the title and names of authors of the papers they were to discuss.

On May 16th, the complete program of the meeting was sent to every member of the society, giving the title of all papers that had been referred, together with the names of those who were appointed to discuss such papers, list of officers, committees, miscellaneous information, etc.

The following is a list of the expenses incurred by the committee:

To rental of Plymouth	$25.00
To printing	45.75
To buttons	10.70
To decorations	25.00
To music	12.00
To central traffic committee	17.00
To postage	42.13
To registration expenses	5.40
To miscellaneous expenses including painting signs, lumber, carpenter work, rent of furniture, drayage, telegrams, etc., etc.	19.20
Total	$202.18
Your committee has collected from Parke, Davis & Co. (expense of programs) and exhibitors	$140.50
Balance to be paid out of general funds	61.63

Respectfully submitted,

ALBERT E. BULSON, Jr.,
Chairman Committee on Arrangements.

Approved by Committee on Finance.

PETER DRAYER,
S. KENNEDY,
G. H. GRANT,
MILES F. PORTER, President.

Dr. A. W. Brayton, Chairman of Committee on Publication, and editor of the proceedings, presented the following report:

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Fort Wayne, May 28, 1896.

Report of Committee on Publication, A. W. Brayton, chairman:

Mr. President and Members of the Indiana State Medical Society.

Gentlemen:—For the fifth time I report for the Committee on Publication:

The essential matters of my report may be found in the preface of the transactions for 1895, which I embody as a part of the report for the present meeting.

The transactions for 1895 contain five hundred and thirty-four pages. For 1894 three hundred and ninety. The increased size is due to the fact that this year forty-three papers were referred to the committee as opposed to twenty in 1894. We present also Dr. Kemper's index of subjects covering the entire past of the society, and invaluable for reference.

The papers average eight pages each without the discussions The discussions are brief, owing to the short time and full program; that of the President's address may be found in the proceedings as it was not received from the stenographer in time to follow the address. Several brief disgussions were omitted by the committee to restrict, as far as possible, the size of the book.

The papers as a whole are possessed of a high degree of merit. They are permeated with the new doctrines in pathology; indeed, over half of them are based upon, or discuss, the various facts and problems of bacteriology. There are but few serial reports of cases and operations, usually a tedious feature of such papers, and but little that is purely speculative and theoretical.

It is not the chairman's function to discuss the papers, but as he has heard nearly every paper read in the society in the last ten years, and has read and edited them for five years, his statement that the present volume is a distinct scientific advance over any yet published may be given some weight and be a matter of satisfaction to the members.

Several papers on the program which were referred without reading do not appear in the volume for various reasons. Dr. G. W. McCaskey, of Fort Wayne, committee on practice, writes us under date of July 6 that his health deterred him from writing his report; Dr. F. P. Drayer, of Fort Wayne, writes that his paper on the "Culture Tests for Diphtheria" summarized the usual proceedings of municipal boards, with reports of cases examined in Fort Wayne, and need not be published; Dr. W. G. McFadden, of Shelbyville, writes, July 8, that he has "concluded not to report his paper on 'Credulity and Skepticism in Medicine' but is content to have it appear by the title only;" letters of inquiry to Dr. J. R. Weist, committee on surgery, of Richmond, and to Dr. H. F. Weist, also of Richmond, author of a paper on "Etiology of Malaria," elicited no reply, and these no doubt valuable papers are therefore lost to the society. Dr. Morris Drake's paper, "Senile Gangrene," was not sent to the committee.

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The paper of Dr. Paul H. Kempf, of Ferdinand, entitled "The Natural History of Medicus Americanus," while good reading in limited circles, the concensus of opinion was that it is not desirable to give it a permanent place in the scientific record of Indiana medicine. We have now accounted for all the papers of the program.

The committee let the contract for printing 1450 copies of the Transactions to Messrs. Carlon & Hollenbeck, of Indianapolis, at a cost of $1038.90 as per bill attached.

The secretaries of the county societies received 1419 copies. The others were sent to Public Libraries, State Societies, Honorary members and medical journals at the direction of the committee.

Respectfully submitted,

A. W. BRAYTON,
Chairman.

INDIANAPOLIS, IND., May 28th, 1896.

INDIANA STATE MEDICAL SOCIETY, IN ACCOUNT WITH CARLON & HOLLENBECK.

1895.	*Dr.*		
Aug. 30.	To 1,450 Copies Transactions, 388 pp.....	$785 00	
	To 158 pp. over, @ $1 55....	244 90	
	To 200 Blanks.....	4 50	
Dec. 3.	To 100 County Report Blanks	4 50	
			$1,038 90
Oct. 10.	By Cash, chk. Dr. Stillson, Treas	305 03	
Dec. 30.	" " " " "	367 00	
			672 03
Balance Due.....			$ 366 87

Approved by Committee on Finance.

PETER DRAYER,
S. KENNEDY,
G. H. GRANT,
MILES F. PORTER, President.

The report of the Treasurer, Jas. O. Stillson, of Indianapolis, received and referred to the Committee on Finance. The report is here appended:

J. O. STILLSON, TREASURER, IN ACCOUNT WITH INDIANA STATE MEDICAL SOCIETY, FOR THE YEAR ENDING May 28th, 1896:

1895.	*Dr.*		
June 7.	To balance on hand last report.....$	08	
" 10.	To amount received, committee on arrangements (Dr. Cook).....	94 00	
			$ 94 08

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1895.	*Dr.*		
June 7.	To cash from Sec. Woodburn on account collection from membership dues.....	$ 645 00	
" 11.	To cash from Sec. Woodburn on account collection from membership dues.....	183 00	
July 25.	To cash from Sec. Woodburn on account collection from membership dues.....	100 00	
Sept. 9.	To cash from Sec. Woodburn on account collection from membership dues.....	50 00	
Dec. 30.	To cash from Sec. Woodburn on account collection from membership dues.....	367 00	
1896.			
Jan. 16.	To cash from R. H. Hutchinson of Cannelton, reinstated.....	1 00	
			$1,346 00
	Total.....		$1,440 08

1895.	*Cr.*	Page.	Voucher No.		
June 8	By cash to committee on necrology.....	428	1	$ 5 00	
" 8.	By cash to committee on arrangements.....	425	2	201 85	
" 8.	By cash to chairman of committee on publication	428	3	50 00	
" 8.	By cash secretary's salary	428	4	100 00	
" 8.	By cash transactions balance due 1894.....	448	5	241 80	
" 8.	By cash Sentinel Printing Company.....		6	47 65	
" 8.	By cash secretary's miscellaneous expenses of meeting 1895.....		7	8 35	
" 8.	By cash Secretary's postage 1895....		8	47 40	
July 30.	By cash stenographer....		9	65 00	
Oct. 10.	By cash Carlon & Hollenbeck, publishers, on account transactions 1895 (part)		10	672 03	
	Total..... ...			$1,439 08	
To balance on hand				1 00	
					$1,440 08

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May 28, 1896, amount due the Society from the defunct Indianapolis National bank, receiver's certificate No. 111	$ 122 24
Amount due by the Society to Carlon & Hollenbeck, balance transactions 1895	366 87

Respectfully submitted,
J. O. STILLSON, *Treasurer.*
Approved by Committee on Finance,
MILES F. PORTER, Pres.
P. DRAYER.
S. KENNEDY.
G. H GRANT.

The Secretary, Dr. Kent K. Wheelock, of Fort Wayne, presented the following report:

Mr. President and members of the Indiana State Medical Society:

I herewith beg to submit the report of the secretary's office for the year ending May 28th and 29th, 1896.

My duties began with Dr. Woodburn's resignation, which was handed to your president January 23, 1896. In assuming the work of your secretary I had no experience to guide me, and no one with whom I could counsel. It was, first of all, needful to find out what was most needed, and our greatest need was found to be money, inasmuch as the treasurer's report of the last meeting showed a balance on hand of 8 cents, and Carlon & Hollenbeck's unpaid bill for the Transactions of 1895 was $366.87. This bill was rendered August 30th, 1895. It has, therefore, remained due, and is unpaid at this time.

The amount of money collected by your secretary, and which will be handed to your treasurer at the close of this meeting is:

For 1358 members	$1,358.00
For Calvin Weidner	1.00
For Calvin Carter, Brookville, Ind., Franklin county	1.00
Total	$1,360.00

The expenses of this meeting, for which there are bills on the secretary's desk, are as follows:

Secretary's salary (K. K. Wheelock, 1896)	$100.00
Secretary's expenses, postage and stationery	18.40
Chairman committee on publication	50.00
Chairman committee on necrology	5.00
Stenographer for two day's work	30.00
Chairman committee of arrangements	202.78
Postage and drayage on Transactions 1896	75.00
Unpaid balance due Carlon & Hollenbeck	366.87
Total	$848.05

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Total amount for publication of Transactions of 1896 now on hand	$511.95
It may be estimated that 50 per cent. of the delinquents will pay before the Transactions go to press; in this case we may add to the total	48.00
Receipts from committee of arrangements, exhibitions, (estimated)	140.50
Grand total	$700.45

Approved by Committee on Finance,

PETER DRAYER,
S. KENNEDY,
G. H. GRANT,
MILES F. PORTER, President.

I would suggest that the committee on publication be instructed not to exceed this amount, or whatever amount of visible cash may be on hand at the close of this session.

Again, the work of the stenographer, beyond the reporting of the business transactions of the session, is a needless expense.

All debates should be reported by the speaker himself, and handed to the secretary, who should attach these reports to their respective papers, or classify them so that they may be readily used. This will add to the scientific value of the Transactions.

I would suggest that, in order to facilitate the work of the secretary and to enable him to devote his time to such work as will do the greatest good to the state society, there be a general order sent out requiring the auxilliary societies to hold their annual election of officers not later than the first meeting in March, at which time the dues should be paid. In this way sufficient time will be given the secretaries of the county societies to make out their reports and forward them so that they shall come within the meaning of section 5 of the by-laws. I have demonstrated that the dues of the state society can be collected without friction before the annual meeting, and believe that compliance with this provision of the by-laws will stimulate the secretary of the state society, and also the secretaries of the local societies to do good work, because if it is demanded on one side it can also be demanded on the other side. Again, good business management demands that bills be paid promptly. Not only does it heighten our own standing with the business world; but by having cash to pay our bills we can demand the discount of 4 per cent. or 6 per cent. which other business corporations receive. The offices of secretary and treasurer should be merged, and such new officers be required to give a good and sufficient bond for twice the amount of which may come into his hands.

The question of section work, and a three day's session, was sub-

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mitted to every society in the state. Replies were too meagre upon which to base a report. I cannot close this report without a word of commendation for the chairman of the committee on arrangements to whose untiring industry is due, in a great measure, whatever of success may attend this meeting. To Drs. F. C. Woodburn and J. O. Stillson I wish to express, in this public manner, the gratitude I feel for their uniform kindness, courtesy, and helpful assistance in my work. Also to the secretaries of the county societies I wish to extend my thanks for their energetic co-operation in the business pertaining to their office.

K. K. WHEELOCK.

Tabuated report of the membership of the Indiana State Medical Society for the year ending May 28-29, 1896:

Sixty-nine counties report		1359
Calvin Weidner, Woodstick, Mass.		1
Posey county, not in		15
		1375
Owen and Tipton county money not in	15	
County societies (disbanded) having no existence.		
Ripley county	1	
Franklin county	3	
Laporte county	2	
		21
Total		1354
Total paid membership for 1896		1360
Total number admitted since last report	226	
Total number suspended since last report	98	
Total number removed since last report	53	
Total number withdrawn since last report	20	
Total number expelled since last report	2	
Total number dead since last report	20	
Total	193	
Total net gain		33

We therefore have 70 active organizations.

K. K. WHEELOCK.

The Secretary's excellent report was accepted, and the financial part reported to the Committee on Finance, who approved it and ordered it made matter of record.

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The report of the Committe on Ethics was presented as follows:

The Committee on Ethics desire to report that only one case has been brought before them for investigation which is the appeal of C. D. Goodrich from the action of the Elkhart County Medical association.

That appeal did not come before your committee in the manner prescribed by the by-laws of the Indiana State Medical Society and therefore can not be entertained at this meeting.

Signed,

C. A. DAUGHERTY,
Chairman of Committee.

The report of Committee on Finance was as follows:

Your Committee on Finance begs leave to submit the following upon the Reports of Secretary, Treasurer, Committee on Arrangements and Committee on Publication:

After having examined their reports, we found them correct. We would recommend that the bill of the Chairman of the Committee of Arrangements, ($61.68 balance due for expenses of current meeting); also bill for balance due Committee on Publication, ($366.87; balance due on account "Transactions 1895,") and the salaries of the Secretary of the Society, ($100.00), chairman Committee on Publication, ($50.00), Committee on Necrology, ($5.00); be paid. We also recommend that the annual assessment of dues be $1.00 per member.

PETER DRAYER,
S. KENNEDY,
G. H. GRANT,
MILES F. PORTER, President.
Committee on Finance.

The various recommendations of the Secretary relating to the business of the society were, on motion, referred to a committee named by the President, for consideration and report. The committee was made up of Drs. C. A. Daugherty, South Bend; Geo. J. Cook, of Indianapolis, and C. B. Stemen, of Fort Wayne. The committee reported as follows, on the following day:

Your committee appointed to consider the suggestions of the secretary in his annual report desire to report, First, That every County Society shall be required to make a full and correct catalogue of its members in good standing and transmit them accompanied by dues on or before the first day of April of each year. Second, Your committee

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would recommend that the secretary and treasurer of the State Society be required to file bond for at least double the amount of money usually collected yearly. Said bond to be approved by the Committee of Finance and placed in the hands of its chairman. Third, Your committee do not deem it expedient to abolish the office of treasurer at this time.

C. A. DAUGHERTY,
G. F. COOK,
DR. C. B. STEMEN.

Amendment to this report of Committee adopted by the society, to-wit: That the Secretary be directed hereafter to turn over to the Treasurer all the money on hand at the time of the annual meeting. Further, that the society authorize the Treasurer to procure bonds from a reliable indemnity trust company, the expense of such guarantee bonds to be paid by the society. Motion put by Dr. Stillson; seconded by Dr. Walker, of Evansville.

Adopted.

The report of the Committee on Collective Investigation, Dr. T. Potter, Chairman, was as follows:

At the last meeting of the society a resolution was passed, directing the president to appoint a committee who should formulate and present a plan for collective investigations by members of the State Society.

The object in view was the utilizing of the opportunities for observation and experience of the thousand or more members of the society for the purpose of getting all facts for settling certain questions whose solution would from time to time be desirable.

For a number of years such collective investigations have been carried on by the British Medical association, and the results have been of great interest and value. Continental organizations have been engaged in similar work. The German Surgical congress, has, for example, been bringing together the experiences of German surgeons in the use of anaesthetics, the annual reports attracting much attention, being widely quoted, and bidding fair to furnish the standards for the medical world.

Properly conducted, such reports, we believe, may become an interesting and valuable feature of our annual meetings, quickening our activities and stimulating accurate observation and a close study of every day experience.

Your committee would therefore recommend that a Committee on Collective Investigations be annually appointed by the president of the society, such committee to consist of six members and to make an

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annual report at the meetings of the society; that this committee shall have the power and it shall be its duty, to select at least two, and not more than four subjects for collective investigation for the year following the meeting at which committee was appointed.

It shall have power to select from among its members sub-committees for the supervision of the various lines of investigation; to enlist and enroll as volunteers such members of the society as may be willing to aid in the several lines of work; and to have printed, and distributed to those who agree to use them, the proper blanks for recording their observations; that the powers and duties of this committee shall be limited to the collection and report of observation upon subjects relating directly to medicine and sanitary science, and shall not include the collection of opinions or desires of members upon questions relating to the policy of, or official positions in the State Medical Society.

THEODORE POTTER,
C. S. BOND,
EDWIN POTTER.
Committee.

The report was accepted and the committee continued.

A communication was received from Dr. H. W. Loeb, secretary of the Mississippi Valley Medical Association, to meet with the society at St. Paul, October 20th to 23rd.

Dr. E. L. Larkins, of Terre Haute, made a motion to the effect that the society endorse the report of the Committee on Vivisection of the American Medical Association of Atlanta, opposing the action of the so-called Humane Society of the District of Columbia. The motion was carried.

The following societies sent up petitions to have the next meeting: Vigo and Miami.

The reports above presented were completed and referred to their respective committees by 10:20 a. m., when the first paper upon medicine was read by Dr. H. H. Smith, of Vincennes, his subject being "Placenta Pervia." The venerable essayist read clearly and forcibly an excellent paper. The tampon was sanctioned. When the crisis arrives, and the life of mother or child is in jeopardy, the uterus should be emptied. The essayist had met four cases in a practice of nearly half a century. These were detailed. One mother was lost, and three children were lost due to premature birth.

The discussion was opened by Dr. B. Van Sweringen, of Fort

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Wayne, who commended the paper. The discussant thought the low attachment was usually due to a chronic endometritis, and therefore the most of the cases proportionally were in multipara. His impulse was always to hasten delivery. He could see no use in local or constitutional astringents; the tampon was in order.

Dr. Burckhardt, of Indianapolis, reported two cases of placenta previa, and continuing said: "Placenta previa very properly has been classified with ectopic gestation; this comparison holds good as well for the abnormal locations of the placenta as for the aetiology of placenta previa. The internal lining membranes of the tubes and the uterus is paved by ciliated epithelium, that oscillates in the tubes toward the womb, in the womb towards the tubal tubal ostia. The cilia in the tubes carry the ova towards the uterus, the cilia in the uterus carry the sperm to the ostium of the tube, where the inoculation takes place. The endometritis destroys this ciliated epithelium, therefore inoculation takes place near the internal orifice."

Dr. Leech, of Crawfordsville, thought the cases more frequent than statistics imply. The discussant indulged in some reminiscences of cases which had occurred in the practice of his compatriots.

Dr. I. N. Rosenthal also discussed the essay, insisting on the use of the fingers (instead of Barnes' dilators), tampon and early delivery.

Dr. Stemen, Sr., was opposed to the use of ergot.

Dr. M. I. Rosenthal, of Fort Wayne, reported three cases; one died at seven and a half months, due to loss of tonicity of the uterine muscle; second case, seven months; version was employed in the the third case and the woman saved.

In the absence of Dr. W. H. Link, of Petersburg, his paper on the "Surgical Treatment of Abortion" was passed; also the paper of G. B. Stemen, of Fort Wayne, on "The Vaginal Douche in Obstetrics," was passed on account of the absence of the essayist.

The fourth paper was on "The Future of Obstetrics," by Dr. A. Whery, of Fort Wayne. The paper was a plea for capable accouchers and nurses rather than the employment of midwives. The ground taken by the essayist was commended and amplified by Dr. Luella Derbyshire, of Fort Wayne.

The last paper on the morning program was by Dr. J. Link, of

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Terre Haute, on "Hydrocele and Varicocele," which was begun at 11:15. The paper was lengthy, but was well received, and time was granted for its completion, on motion of Dr. Brayton.

Dr. G. Smythe, of Greencastle, said in discussion that he does not remove any portion of the scrotum; he makes three incisions, introduces iodoform and the scrotum retracts. No stitching is required and there is no hemorrhage; this operation should precede all others in 90 per cent. of cases.

Dr. Bruner, of Greenfield, detailed the methods of Senn for treatment of varicocele.

Dr. Link, of Terre Haute, opposed the injection of carbolic acid into serous cavities. Dr. Link in closing defended his methods in a masterly manner. Shortening the scrotal tissues works not infrequently a change in the entire disposition of the patient.

The society adjourned at 11:45 to meet at 1:30 p. m.

SECOND SESSION, 1:30 P. M.

"Cranial and Intercranial Injuries," was the title of a paper read by Dr. W. H. Myers, of Fort Wayne. (Which was not received for publication, though requested by letter.—Ed.) The essayist objected to the term "concussion" and would substitute "injuries to the brain due to concussion." Injury is the primary factor. Concussion is synonymous with gross injury or contusion, or extravasation of blood in the brain. Thirteen cases were presented from Bryant and others corroborative of this view. Regarding physical disturbances following injury, the author cited four cases in his practice where the primary injury resulted in loss of memory. Unconsciousness is a common result, and complicates legal proceedings for damages.

The discussion was opened by Dr. G. H. Grant, of Richmond, who thought the idea of discussion being a shaking up of the molecules of the brain without visible lesions preposterous.

Dr. Grant said:

> This paper is a classic, and would seem to be the last word on the subject; and I feel that I can add nothing to what the essayist has presented. But there is one form of meningeal hemorrhage to which allusion was made at the conclusion, which I desire to mention, the meningeal hemorrhage of infancy. The foetus in utero may be destroyed by this

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accident coming on as a result of septic infection through the placental circulation—the mother being afflicted with one of the infective fevers. In this condition, the blood becomes altered as in any other septic condition, and in its altered condition, easily escapes through the vessel wall to produce a true cortical clot; as has recently been demonstrated in autopsies on still-born children. If such autopsies were more often done the condition would undoubtedly be found to be common. These cases are, of course, beyond any aid. But that other terrible form of infantile hemorrhage that comes from pressure during tedious labor, or the inadvertent use of the forceps, if it does not cause death, probably results in mutism, spastic diplegia, or bilateral hemiplegia is as the essayist truly says, worse than death. But this we can not prevent. While it is too advanced ground to perhaps become a professional procedure, Gray advocates the induction of labor at the seventh month in those cases that pelvimetry has given warning of a too contracted birth-channel; and it would appear that this offers more to the child, with little more risk to the mother, than the life of a crippled idiot, with the tardy aid of the orthopedic surgeon.

Dr. McCaskey, of Fort Wayne, made a plea for a clear distinction between lesions and concussions of the brain; he thought they were frequently co-existing, but that there are molecular concussions pure and simple.

The paper was referred to the Committee on Publication. The reading and discussion occupied twenty minutes.

The second paper was by Dr. Edwin Walker, of Evansville, upon the "Abuse of Water in Surgery." There were 200 present at the reading of Dr. Walker's paper. Dr. Walker showed that the danger of infection of wounds from the air is very slight; the natural serum is the best dressing. If the hands and instruments are clean no water or dissolved antiseptics are necessary. There is too much wet dressing, too much wet sponging and irrigation. Water is rarely sterile and is difficult to secure in emergency cases. Dry sponging of clean wounds with sterilized gauze is the best method of antisepsis. The essayist never irrigates after curettement of the uterus or after early abortions before the third month. Irrigation not infrequently forces pus through the fallopian tubes and produces sepsis. The author has entirely abandoned water in all operations upon the external genital tract; he does not wet his instruments. A fair trial, the author thought, would convince any surgeon of the great superiority of the dry method.

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Dr. F. J. Hodges, of Anderson, coincided generally with the essayist. But warm flushing of the intestines revives the patient by absorption of the water.

Dr. J. L. Gilbert, of Kendallville, did not think it was necessary to boil the water more than a moment.

Dr. Joseph Eastman, of Indianapolis, stated that if he ever reached the surgical heavens it would be by water. Sterilization is now reduced to the thermal and mechanical; the chemical is now almost entirely laid aside. The discussant stated that with Dr. Price, of Philadelphia, he flushed the abdomen, and Dr. Price has a greater per cent. of recoveries than any other operator whom he choose to believe. We should teach our students that antisepsis comes by water.

Dr. C. B. Stemen, of Fort Wayne, saw no advantage whatever from the teachings of the essayist.

Dr. H. O. Pantzer, of Indianapolis, emphasized the curative powers of nature. She can care for a simple fracture without ointment. Dr. Walker's paper expresses the modern views and results of the best operators. Dr. Howard Kelley is abandoning the wet methods in laparotomy, and that with all the pathological backing of Johns Hopkins University

Dr. J. Z. Powell, of Logansport, thought the essayist went to an extreme. He favored in contused and large wounds the use of hot water to stop the oozing and "vitalize" the tissues.

Dr. Smythe, of Greencastle, cited a case of retained placenta of three days' duration, the case was septic; temperature, 105; the uterus was emptied, curetted and packed with dry gauze; after an hour the uterus contracted, the temperature fell to 100 degrees, and recovery ensued.

Dr. C. W. Burkett, of Warsaw, supported the essayist, and advocated the dry dressings.

Dr. Ford, of Wabash, thought the discussion was a matter of individuality. Each of the surgeons he met got good results from the method he was most familiar with. For himself he was an advocate of dry dressing.

Dr. A. M. Hayden, of Evansville, supported the dry method in laparotomy; water disseminates the pus.

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Dr. H. V. Passage, of Peru, asked as to the number of sponges necessary by the dry method.

Dr. Walker, in closing, contended for simplicity. He carried abundant sponges and pans. Water is used before the operation; never after the first cut. The essayist had not used his irrigating curette in two years, and in that time had not had an increase of temperature of 100 degrees. He advised the opponents of the dry method to go home and try it. The paper and discussion occupied an hour, and presented one of the most vivacious episodes of the meeting.

Dr. Martha J. Smith, of Indianapolis, read her paper, "Etiology of Diseases Peculiar to Women." The essay covered the ground of hygiene, social and sexual life and education. The attention was marked, and the reading distinct and precise.

Dr. Sexton, of Rushville, complimented the essayist upon the thoroughness of her essay in calling up all the evils to which women are subjected from puberty to the climacteric. The discussant thought that the greatest number of difficulties of women were caused by bad obstetrical work on the part of the general practitioner, 80 to 90 per cent. Sepsis in our obstetrical wounds causes a large amount of the work of the gynecologist.

Dr. Greenawalt, of Fort Wayne, further castigated the meddlesome obstetrician. Specific vaginites brought more disaster than any other cause save meddlesome midwifery. As a third cause he placed the results of criminal abortion. Some few cases may be due to worry.

Dr. Batman, of Ladoga, thought the stunting of beautiful girlhood was due to the teachers of our public schools, who had taken education out of the hands of the physicians and patrons.

Dr. Miller, of Goshen, enlivened the discussion with a modern instance wherein the girl patient had been the rounds of the specialists and was cured by the general practitioner.

Dr. Louis Burckhardt, of Indianapolis, denounced digital vaginal examination, and was warmly applauded upon taking his seat.

Dr. Myers, of Fort Wayne, thought the failure to recognize early cancer was a source of frequent and unnecessary death.

Dr. M. I. Rosenthal, of Fort Wayne, condemned the crime of abortion in modern life; he also stated that for forty years he had

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used disinfectants, namely, the tincture of iodine, and that the results were as good as at present.

Dr. Link, of Petersburg, thought washing the hands had little to do with sepsis in country practice. The prevention of conception, Dr. Link thought, was a frequent cause of disease in women.

Dr. Schwartz considered various methods in the third stage of labor as related to the discussion.

Dr. Van Buskirk, of Fort Wayne, further condemned the frequency of criminal abortion. He defended the school teachers; they are the instruments of a system only.

Dr. Smith closed the discussion, which had extended over an hour and covered a wide range of topics; the essayist stated that no true woman would desire or cause an abortion, whether she was a physician or not. Dr. Smith's paper and sentiments of true womanhood were warmly applauded.

In the absence of Dr. L. H. Dunning, of Indianapolis, his paper on "Diffuse Pelvic Inflammation" was referred for publication without reading.

Dr. Herman A. Duemling, of Fort Wayne, read his essay on "Perineorrhaphy and Perineoplasty," which was based upon an anatomical study of the parts, and clinical observation.

Dr. Joseph Eastman, of Indianapolis, commended the essay. He would in every case before operation dilate the anal sphincter. The rectum should be well held back by the assistants at the time of bringing the sutures together. Failure to paralyze the sphincter is a frequent cause of failure to unite in primary operations. In answer to a question of Dr. J. Powell, Dr. Eastman thought the operation might be done a week or two weeks or two months after delivery.

Dr. H. O. Pantzer commended the technique of Dr. Duemling's method, and advocated the use of a good table rather than operating upon a bed or lounge. In cases where the parts are sodden by long pressure of the child's head, it is necessary and proper to wait until vitality is restored to the injured tissues.

Dr. I. Rosenthal, of Fort Wayne, discussed the details and time of operation at some length.

Dr. Duemling closed the discussion.

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At this time, 4:10 p. m., the group of papers on Diseases of Women was closed and the eye group was taken up. This series was opened up by Dr. David W. Stevenson, of Richmond, a "Plea for Preliminary Iridectomy in Cataract Extractions." The paper was discussed by Drs. K. K. Wheelock, of Fort Wayne; J. P. Worrell, of Terre Haute, and Geo. F. Keiper, of Lafayette.

The essayist, in closing, regarded iridectomy by a clean surgeon as safe as removing a tonsil.

Dr. Geo. F. Keiper, of Lafayette, read a paper upon an "Epidemic of Trachoma," occurring in a juvenile home under his care. A similar epidemic (contagious) occurring in the St. Vincent's Orphan Asylum, Fort Wayne, was observed by Dr. Bulson, who has the institution under care.

Dr. J. O. Stillson, of Indianapolis, read his paper, "Black Cataract—Report of a Case," which was discussed and referred for publication.

Dr. J. W. Brunker, of Riley, read a paper on "Intubation," recommending it as the proper operation for the general practitioner.

Dr. Lewis C. Cline, of Indianapolis, thought the operation had come to stay, and is applicable in a wide range of pathological conditions.

Dr. Guido Bell, of Indianapolis, was requested to speak of his method of inserting the tube without the use of the gag, and of removing it without the extractor. He has used the method in over a hundred cases since 1888. Dr. Bell had used the antitoxin treatment in forty different cases, with death in but one case. He regards it as the most hopeful treatment of diphtheria.

Dr. Bulson, of Fort Wayne, like Dr. Cline, thought the benefits of intubation were over-estimated. The operation is done in many simple cases where tracheotomy would be delayed; hence the statistics are favorable to intubation. Among the accidents of intubation is that of pushing a plug of mucus before the tube. Again, the tube does not reach far enough to admit the air to the lungs.

Dr. Powell continued the discussion, holding that the statistics of intubation are overcolored and fallacious.

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Dr. H. G. Passage, of Peru, was not a user or believer in intubation, as there is no reason in obstructing an already obstructed trachea. He would substitute Brainard's tracheotomy.

Dr. Sweringen, of Fort Wayne, advocated antitoxin; his city is the home of diphtheria; it is always present, but since the use of antitoxin nearly every case had recovered.

Dr. Bond, of Richmond, thought the members were discussing two different conditions—diphtheria and membranous croup; they have the same bacillary cause, but are different in their seat and effect.

Other members spoke approvingly of antitoxin; there was not an opposing voice; one thought the physician was criminally liable who does not use antitoxin.

The essayists closed what proved to be the third discussion of the day of absorbing interest, and which extended from five to six o'clock.

The society adjourned after reading and discussing eight papers in four and a half hours continuous session.

THIRD SESSION, 7:30 P. M.

The exercises opened with the overture, "Raymond" (Thomas), by Reineke's Orchestra.

The President, Dr. Miles F. Porter, of Fort Wayne, read his address—subject, "The Physician's Relation to the Body Politic."

The address on "Medicine" was by Dr. B. Van Sweringen, of Fort Wayne. He discussed the relation of special organs, as the liver, pancreas and kidneys, and their secretions, to the entire organism. The essay, in brief, was a review of the physiology and pathology of the ductless glands, followed by a second section on immunity and the resulting serum method of treatment. The study covered a half century of physiological research; its facts were very prettily put together.

The orchestra broke in between Dr. Van Sweringen's address and Dr. Potter's report on bacteriology for the year, with Kerker's 'Brigand's," excellently rendered.

This is the fifth report upon the progress of bacteriology made by Dr. Potter. The main part of it was devoted to the relations of diphtheria and membranous croup, so-called.

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The report on surgery was made by Dr. Fred J. Hodges, of Anderson. The essayist gave an interesting series of speculations as to the nature of vitality, leaning towards the modern chemical and physical notions as opposed to the vitalists. The essay was interesting and well received. The author retained certain experiments he had made for presentation in the transactions; these researches, he claimed, demonstrated that air held in cavities in animal bodies may follow the lines of least resistance, enter the venous circulation and cause great distress and even death.

(A letter from Dr. Hodges was received by the Chairman in December stating that he threw his paper on the Secretary's table, and expected it to be published. It was never received by Secretary Heath, nor was it seen by the Chairman of Committee on Publication, who regrets that Dr. Hodges excellent paper was not received for publication. A. W. B.)

To the music of Waldteufel's "Espanita" the audience left the assembly room for the reception at the Fort Wayne Club.

SECOND DAY, FRIDAY, MAY 29.

Dr. George C. Stemen, member of the Committee on the Effects of Alcohol in Health and Disease, read a paper upon "The Use of Alcohol in Surgery." The Committee on Inebriety was continued by consent of the society upon motion of Dr. Brayton, as follows: Drs. Homer J. Hall, of Franklin, chairman; George C. Stemen, of Fort Wayne; G. R. Green, of Muncie; Franklin Greenwell, of Huntington, and C. A. Daugherty, of South Bend.

The committee appointed by President Bond, of Richmond, in 1894, by request of Dr. Hall, (page 252, Transactions 1894), consisted of Drs. Hall, Smythe, Fletcher, Fairfield, and G. C. Stemen. At the meeting of 1895, Dr. Hall reported that a subject was assigned to each member of the committee at a conference meeting held September, 1894. Dr. W. B. Fletcher gave in a report on the "Effects of Alcohol on the Nervous System;" Dr. Smythe on the "Treatment of Alcoholism;" and Dr. Hall upon the "Action of Alcohol Upon the Heart and Blood."Dr. Fairfield and Dr. Stemen failed to give in their reports upon "The Legislature Necessary to and in the Proper Care and Treatment of Alcoholics," and "The Influence

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of Alcohol in Surgery," respectively. The papers of Drs. Hall, Smythe and Fletcher are in the transactions for 1895, pages 330 to 341 inclusive.

The reading of Dr. Stemen's paper at Fort Wayne, and the presentation of a paper on the "Treatment of Alcoholics and Inebriates in State Hospitals," by Dr. Hall, completed the work by the committee.

Dr. Potter requested the society to release him from further duty of the annual report upon bacteriology, expressing the opinion, that with the progress of general knowledge upon the subject, it was no longer necessary.

The annual reports upon medicine and surgery were dispensed with, but the report upon bacteriology was ordered continued by a large majority, in spite of Dr. Potter's objections.

The Committee on Ethics was discharged, as Chairman Daugherty had no matters to bring before the society; the doors of the Temple of Janus had remained closed throughout the year.

Dr. William P. Whery, of Fort Wayne, read a paper on "The Medical Statute of Indiana." Dr. Whery stated the following views:

> The main defect to be remedied by an amended medical act is the power of the State Board of Health. This board should be empowered to superintend every matter connected with the sanitation of the state. This includes the registration of medical practitioners and the consideration of their qualifications. It should also include the superintendence of examinations of practitioners intending to settle in the state. The members of boards of examiners should be chosen by the Indiana State Medical association, not by the colleges nor by the board of health. We can hardly expect a perfect act, but from year to year we may better our position, and in drafting an act we must try to avoid exciting opposition to its main provisions.

Dr. Whery's paper was discussed by Dr. Norman Teal, of Kendallville, who has been two terms in the Assembly and one in the State Senate. He insisted there should be an able committee appointed by the State Society to secure better legislation. He would recognize no school in appointing health officers; only physicians. The State needs scientific physicians, regardless of schools.

Dr. A. E. Van Buskirk, of Fort Wayne, did not agree with Dr.

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Teal that none of the State laws are of any worth; on the contrary the State law permitting the legal securing of bodies for dissection in our medical colleges had cost him $800. It cost $155.16 sheriff's fees (the doctor was in jail previous to the law). His remarks elicited much interest and amusement.

Dr. E. J. McOscar, of Fort Wayne, spoke vigorously to the question, castigating the poorer medical schools.

Dr. Joseph Eastman, of Indianapolis, said the weakest point in our law is that the county clerk has no standard of the value of a medical college; his idea of a diploma is a source of fees to himself.

Dr. George B. McClellan Bower, of Fort Wayne, had opposed the appointment of any college professor upon medical examining boards.

Dr. Eastman stated with good natured satire that he would not even permit Dr. Bower on an examining board, because a graduate might be prejudiced in favor of his alma mater, and give licenses to her graduates.

Dr. Ford, of Wabash, spoke to the question, which was closed by the essayist at 10:50, after nearly an hour's discussion before an audience of nearly 200 delegates and their friends.

Dr. G. R. Green, of Muncie, read a paper on two subjects, "Medical Evidence and Coroners." He opposed coroners, as they are judicial officers shorn of all power except that of apprehending criminals. He favored the German custom of no coroner, or the French regime by which the coronial function is left entirely to the prosecuting attorney.

A motion of Dr. Bowles, of Muncie, approved by E. J. McOscar, of Fort Wayne, that a committee of three be selected to confer with the State Bar Association, and with their aid secure the abolition of the coronial office in Indiana, was strenuously opposed by Dr. C. B. Stemen and Dr. Teal, of Kendallville, and was defeated by a considerable majority.

Dr. F. C. Heath, of Indianapolis, read a brief paper on the "Common Use of Glasses," which was discussed by Dr. Charles K. Bruner, of Greenfield.

The next paper was on the "Diagnosis and Treatment of Meningeal Hemorrhage," by Dr. G. W. McCaskey, of Fort Wayne.

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FIFTH SESSION, FRIDAY, 1:30 P. M.

The final session for business and reading of papers opened with a large attendance, over 175 being present.

Dr. H. O. Pantzer, of Indianapolis, read a paper entitled "Modern Views Regarding the Physiology of Matrimonial Sterility."

Dr. Guido Bell, of Indianapolis, read a contribution to speculative research entitled, "Human Physiolology in Its Relation to Biology," which was listened to with close attention.

Dr. A. P. Buchman, of Fort Wayne, stated that Dr. Bell's views are at issue with physiologists, and therefore difficult of discussion. Dr. Bell would have us regard the entire body as a cell, and so springs the whole question of vitalism as opposed to the chemical and mechanical theories of life. If we begin with vitality we have a philosophical and logical point of departure. Dr. Bell's paper is entirely defensible.

Dr. James F. Hibberd, of Richmond, confined at home by illness, sent over the following resolution, which was presented by Dr. G. H. Grant, of Richmond:

> Resolved by the Indiana State Medical Society, That it is the moral, social and legal duty of all physicians to report to the proper health authorities all births, deaths and communicable disease as prescribed by law, occurring in their respective practice, to the end that the public may be benefitted.

Dr. Grant stated, in support of the motion advising doctors to support the work of the State and local health boards by reporting all contagious diseases without fee for the service, that a communication which he held from Attorney General Ketcham stated that physicians are possessed of several exemptions. They were not drafted in war; an old statute exempts them from jury duty; in large cities they have the right of way on the streets; may drive rapidly, and in some cities need not wait for funeral processions.

The motion carried without dissent.

The paper of Dr. Hibberd, "Auto-Activities of the Human Body;" that of Dr. A. E. Sterne, of Indianapolis, "Cerebral Arterio-Sclerosis and Apoplexy;" "Sanitary Problems Concerning Tuberculosis," by Frank B. Wynn, of Indianapolis; "Inter-Cranial Lesions with Paralysis of Several Cranial Nerves," by J. T. Masters, of Indi-

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anapolis, were referred to the Committee on Publication, without reading, in the absence of their authors.

Dr. Theodore Potter read his paper, "Modern Problems Concerning Tuberculosis." The subject was continued by Dr. John B. Fattic, of Anderson, with the topic, "Is Consumption Ever Curable."

Dr. E. L. Larkins, President of the Terre Haute Society, read a series of "Collective Reports from 132 Cases of Diphtheria and Diphtheritic Croup," with comments and conclusions."

It was now 3:30 o'clock, and most of the members living in the central and southern parts of the State withdrew to take their trains for home.

Dr. J. A. Goldsberry, of Bloomingdale, read a paper on "The Therapeutics of Typhoid Fever." He advocated abundant skim-milk diet; the cold bath treatment. He had used large doses of quinine on alternate days, producing moist skin and abation of fever, with refreshing sleep. He had supplemented quinine with the wet pack. Antiseptics are indicated theoretically. Calomel was given in purgative doses at first; mineral acids in impaired digestion; opium in diarrhoea; alcohol in depression with strychnia; digitalis rarely. Prognosis should be guarded.

Dr. E. J. McOscar, Fort Wayne: It doesn't matter how we apply cold water. Can be done at the cross roads as well as at the best hospital. Can use a sprinkling can or sponge. As to therapeutics we don't want much of it. Patients get too much. High temperature is not what kills a patient with typhoid fever. The fever comes back until the cause is removed, and the cause is the point at which treatment is directed. Antisepsis is the main feature in treatment.

Dr. S. H. Havice, of Fort Wayne: Germs are not alone found in the stools, but found also in urine, which should be disinfected as well. Physicians give entirely too much medicine.

Dr. Burkett, of Warsaw: Disagreed with Dr. McOscar concerning the inocuousness of high temperature. Certainly hyperpyrexia causes changes. He believed turpentine is as essential in typhoid as quinine in malaria.

Dr. McCaskey, of Fort Wayne: Germs are not as quickly killed as some think. Some germs require many minutes. Anthrax

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requires boiling for an hour. Coal-tar products should be condemned. Cold water only is permitted as antipyretic in typhoid. High temperature does cause degenerative changes.

Dr. Pantzer, of Indianapolis: It is perplexing to read of opinions for and against reduction of temperature. When the temperature is dangerous, coal-tar products do good; the tongue becomes moist and all secretions are revived. We can feed our patients when the glands are alive. The consequences of high temperature should be met promptly.

Dr. McDonald, of Warsaw: Disagreed with Dr. McOscar about the ability to apply cold water treatment at any place; patient should be put in bath; this a great advantage.

Dr. Gerrish, of Seymour: As to disinfectants, he would keep the disinfectant in the vessel all the time.

Dr. Hodges, of Anderson: Would like to speak of podophyllin. It is more than a gastro-intestinal stimulant; it restores glandular activity. If exhibited in the beginning tympanites never appears; foul tongue likewise nor high temperature. Given with arsenis, it is a tissue tonic. The only inconvenience is that patient is confined to bed. I don't think it can be aborted. It is the eliminatives which are of benefit. Give one-fourth of a grain in brandy; diminish or increase so as to get two movements in twenty-four hours.

Dr. Pantzer: Does Dr. Hodges rely solely on antiseptics? Is it not the antiseptic action of the secretions that does good?

Dr. Hodges: Yes, sir.

Dr. Ford, of Wabash: If you keep the bowels open you prevent absorption of poisonous ptomaines.

Dr. N. J. Kithcart, of Columbia City, read a paper on the "Diagnosis of Cancer of Stomach." The essayist thinks cancer much more frequent than formerly, and that the diagnosis is rarely made early. He believed more careful study of symptoms will enable an early diagnosis to be made.

Patients with cancer of the stomach abhor meat, probably because of the absence of hydrochloric acid in the secretion. Pain is a variable symptom, and depends much on the location of the tumor.

Dr. Wilson, of Plymouth, thinks symptoms, in the absence of

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tumor, should not be relied on to make a diagnosis. He had arrived at diagnosis by microscopical examination of fragments.

Dr. George C. Stemen, of Fort Wayne, moved that the remainder of the papers be referred by title, and that after executive business the society adjourn, as it was now after five o'clock.

The papers remaining unread were "Oscillations in and Evolution of the Present Treatment of Typhoid Fever," by O. A. Rea, of Marmont; "Diabetes Mellitus; Its Modern Treatment," by Carl Prougier, Fort Wayne; "Oxygen Inhalations in Pneumonia," by Walker Schell, of Terre Haute; "The Management of Purpura Hemorrhagica," by George B. McClellan Bower, of Fort Wayne; "The Practice of Medicine in the Light of Bacteriology," by H. C. Hume, of Terre Haute; "Some of Our New Therapeutic Resources," by S. H. Havice, of Fort Wayne; "The Relation of Pathogenesis, Morbid Anatomy, and Diathesis," by H. W. Weer, of Bluffton; "Drawbacks to the Financial Success of the General Practitioner," by T. F. Leach, of Crawfordsville.

The following resolution from Wabash county was adopted:

> Whereas, Several of our most wealthy life insurance companies have arbitrarily fixed the fee for medical examinations at $3, at the same time requiring additional clerical work, physical examination, examination of urine, etc.; therefore be it
>
> Resolved, That it is the sense of this meeting that $5 is a reasonable fee for such services, and the dignity and honor of the profession demand that this shall be the minimum fee.
>
> A. J. SMITH,
> R. Z. BLOUNT,
> Com. Wabash Co. Med. Society.

The following is a list of the officers elected by the society at the Fort Wayne meeting to serve for the ensuing year:

President—J. H. Ford, M. D., Wabash.

Vice President—W. F. Batman, M. D., Lebanon.

Secretary—F. C. Heath, Indianapolis.

Assistant Secretary—J. W. Rucker, M. D., Shelbyville.

Treasurer—A. E. Bulson, Jr., M. D., Fort Wayne.

President Ford announced the following committees in July; they have been published in the *Indiana Medical Journal:*

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ETHICS.

Chairman—C. A. Daugherty, South Bend.

Edwin Walker, Evansville. H. O. Pantzer, Indianapolis.
Wm. Flynn, Marion. J. D. Gatch, Lawrenceburg.

ARRANGEMENTS.

Chairman—E. L. Larkins, Terre Haute.

Geo. R Green, Muncie. H. T. Montgomery, South Bend.
W. F. Lawson, Danville. E. P. Easley, New Albany

PUBLICATION.

Chairman—A. W. Brayton, Indianapolis.

A. E. Bulson, Jr., Fort Wayne. Theodore Potter, Indianapolis.
Allison Maxwell, Indianapolis. F. C. Heath, Indianapolis.

FINANCE.

Chairman—Allen Pierson, Spencer.

Geo. F. Beasley, Lafayette. J. C. Sexton, Rushville.
J. O. Malmsburg, Peru. M. F. Gerrich, Seymour.

CREDENTIALS.

Chairman—W. G. McFadden, Shelbyville.

Clark Cook, Fowler. H. M. Smith, Vincennes.
L. W. Smith, Wabash. J. T. Chenowith, Winchester.

MEDICAL LEGISLATION.

Chairman—W. N. Wishard, Indianapolis.

G. W. Kemper, Muncie. G. T. Edenharter, Indianapolis.
T. C. Kennedy, Shelbyville. A. M. Owens, Evansville.

NECROLOGY.

James F. Hibberd, Richmond.

BACTERIOLOGY.

Theo. Potter, Indianapolis.

Terre Haute was selected as the next place of meeting. The

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time of meeting was left to the Committeee of Arrangments according to the usual custom.

Upon motion of Dr. F. J. Hodges, of Anderson, the Committee on Publication were ordered to reduce the bill of the printer of the Transactions as much as possible. The motion prevailed.

The President announced that President-elect J. H. Ford would announce his committees in a few weeks.

Dr. Ford, of Wabash, the President-elect, was introduced and thanked the society for the honor conferred. Dr. L. J. Weinstein, of Terre Haute, moved that the society return thanks to the retiring President, Dr. Porter, and the officers associated with him in the conduct of the meeting.

Dr. Weinstein, in thanking the society for the honor conferred upon his city, said: "We thank the society for sending the next annual meeting to our city. We apreciate the honor and all citizens of Terre Haute will try hard to deserve it. If you all come down there we will give you as good a time as you have enjoyed in Fort Wayne. We bid you welcome in advance.

The society then adjourned sine die.

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LIST OF MEMBERS

—OF THE—

INDIANA STATE MEDICAL SOCIETY.

ALLEN COUNTY.

OFFICERS.

Kent K. Wheelock, President.
Elmer E. Morgan, Secretary.
Herman A. Duemling, Treasurer.

CENSORS.

Albert E. Bulson, Jr.
B. Van Sweringen.
C. B. Stemen.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Adams, Horace E.	Harlan	1895.	
Anderson, Warner W.	Fort Wayne	1896.	
Barnett, W. W.	Fort Wayne	1893.	
Beavers, S. D.	Decatur	1895.	
Bennett, H. C.	Fort Wayne	1896.	
Bower, G. B. M.	Fort Wayne	1894.	
Boyers, J. S.	Decatur	1895.	
Brudi, G. G.	New Haven	1894.	
Buchman, A. P.	Fort Wayne	1886.	
Bulson, Albert E. Jr.	Fort Wayne	1894.	
Chambers, J. D.	Fort Wayne	1896.	
Derbyshire, Luella	Fort Wayne	1896.	
Dills, T. J.	Fort Wayne	1894.	Removed.
Dinnen, James M.	Fort Wayne	1888.	
Drayer, L. P.	Fort Wayne	1895.	
Duemling, H. A.	Fort Wayne	1894.	
Gavin, F. W	Fort Wayne	1895.	
Geary, J. K.	Coesse	1895.	
Gilbert, C. J.	New Haven	1894.	
Greenawalt, G. L.	Fort Wayne	1893.	
Greenwell, Frank	Huntertown	1896.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Gross, W. O	Fort Wayne	1893.	
Havice, S. H.	Fort Wayne	1892.	
Hetrick, J. H.	Fort Wayne	1894.	
Howe, Delia E.	Fort Wayne	1895.	
Kappel, J. H.	Fort Wayne	1894.	
Kesler, A. J.	Fort Wayne	1896.	
Linville, D. S.	Columbia City	1895.	Whitley County.
Lipes, U. G.	Fort Wayne	1894.	
McCaskey, G. W.	Fort Wayne	1886.	
McCausland, J. W.	Fort Wayne	1896.	
McComb, W. S.	Sheldon	1894.	
McEvoy, J. B.	Fort Wayne	1896.	
McHugh, J. E.	Fort Wayne	1894.	
McOscar, E. J.	Fort Wayne	1894.	
Mentzer, S. E.	Monroeville	1894.	
Miller, J. C.	Fort Wayne	1894.	Removed.
Miller, J. E.	Fort Wayne	1894.	
Morgan, Elmer E.	Fort Wayne	1894.	
Myers, W. H.	Fort Wayne	1888.	
Neischang, C. C. F.	Fort Wayne	1896.	
Nichol, John	Fort Wayne	1896.	
Nierman, H. G.	Fort Wayne	1894.	
Omo, J. H.	Harlan	1895.	
Porter, M. F	Fort Wayne	1881.	Pres. State So. 1895.
Proegler, Carl	Fort Wayne	1894.	
Rosenthal, I. M.	Fort Wayne	1886.	V-Pres. State So. '7
Rosenthal, M. 1.	Fort Wayne	1895.	
Ruhl, W. D.	Fort Wayne	1884.	
Schilling, Carl	Fort Wayne	1893.	
Schilling, J.	Fort Wayne	1894.	Resigned.
Siver, E. L.	Fort Wayne	1894.	
Stemen, C. B.	Fort Wayne	1878.	
Stemen, G. B.	Fort Wayne	1894.	
Stemen, G. C.	Fort Wayne	1893.	
Stemen, Harriet F.	Fort Wayne	1895.	
Van Buskirk, A. E.	Fort Wayne	1894.	
Van Sweringen, B.	Fort Wayne	1894.	
Van Sweringen, H.	Fort Wayne	1878.	
Wheelock, Kent K.	Fort Wayne	1881.	Ass't Sec'y State So.
Whery, Mary A.	Fort Wayne	1888.	and Act. Sec'y '95.
Whery, W. P.	Fort Wayne	1885.	
Williams, Alice B.	Columbia City	1895.	
Williams, C. S.	Columbia City	1895.	

Society meets every other Tuesday evening.

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BARTHOLOMEW COUNTY.

OFFICERS.

A. J. Banker, President.
G. O. Cosby, Vice-President.
W. C. Roland, Treasurer.
W. C. Roland, Secretary.

CENSORS.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Arwine, J. S.	Columbus	1882.	
Arwine, L. Ruth	Columbus	1896.	
Banker, A. J.	Columbus	1882.	
Butler, W. H.	Columbus	1884.	
Cosby, G. O.	Burnsville	1882.	
Curtis, G. L.	Columbus	1894.	
Falk, F.	Indianapolis	1881.	Lately moved to Indianapolis.
Hawley, K. D.	Columbus	1883.	
Holder, R. E.	Columbus	1895.	
Kirkpatrick, A. M.	Columbus	1895.	
McLeod, A. J.	Columbus	1883.	
McCoy, G. I.	Columbus	1884.	
Regennas, E. G.	Hope	1884.	
Roland, W. C.	Columbus	1895.	
Voris, S. M.	Columbus	1883.	
Wisner, W. E.	Columbus	1883.	

Society meets on the first Tuesday night of each month.

BENTON COUNTY.

OFFICERS.

Jonathan Kolb, President.
D. E. Marity, Secretary.
D. E. Marity, Treasurer.

CENSORS.

Clark Cook.
G. P. Crume.
O. M. Flack.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bloom, H. G.	Swanington	1895.	
Cook, Clark	Fowler	1885.	
Crume, P. P.	Boswell	1895.	
Flack, O. M.	Ambia	1895.	
Kolb, Jonathan	Oxford	1874.	
Lee, Robt. E.	Boswell	1895.	Removed from state.
Marity, David	Fowler	1895.	
Marity, James S.	Fowler	1876.	
Rodman, James M.	Fowler	1887.	
Smith, H. Karl	Fowler	1895.	

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BLACKFORD COUNTY.

OFFICERS.

N. D. Clouser, President.
C. Q. Shull, Vice-President.
P. Drayer, Secretary.
C. R. Mason, Treasurer.

CENSORS.

H. C. Davisson.
C. L. Bell.
I. R. Williams.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bell, C. L.	Hartford City	1896.	Retired.
Clapper, M. M.	Hartford City	1891.	
Clouser, N. D.	Hartford City	1866.	
Corey, C. N.	Hartford City	1891.	
Davisson, H. C.	Hartford City	1877.	
Drayer, P.	Hartford City	1866.	
Dodge, W. A.	Montpelier	1896.	
Elder, C. E.	Montpelier	1896.	
Harrold, J. R.	Roll P. O.	1881.	
Emshwiller, M. S.	Montpelier	1896.	Retired.
Maddox, L. E.	Montpelier	1886.	
Mason, C. R.	Hartford City	1872.	
Morrison, J. A.	Montpelier	1878.	
Smeddley, C. B.	Montpelier	1896.	
Small, C. Q.	Montpelier	1866.	
Sellers, John	Montpelier	1896.	
Tandon, T. C.	Priam P. O.	1874.	
Williams, I. R.	Montpelier	1896.	

Society meets on the fourth Thursday of each month.

BOONE COUNTY.

OFFICERS.

J. S. Reagan, President.
P. B. Little, Vice-President.
J. R. Ball, Secretary.
W. H. Schultz, Treasurer.

CENSORS.

C. H. Smith.
W. F. Batman.
D. R. Walker.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Ball, J. R.	Lebanon	1892.	
Batman, W. F.	Lebanon	1895.	
Bounnell, Harry	Waynetown	1893.	Removed.
Bounnell, M. H.	Lebanon	1877.	Deceased.
Bounnell, T. A.	New Brunswick	1876.	
Bennington, A. M.	Max	1876.	
Cotton, H. T.	Zionsville	1880.	
Fitch, A. P.	Lebanon	1890.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Hamilton, J. A.	Advance	1889.	
Hardy, J. S.	Lebanon	1877.	
Heady, W. S.	Jamestown	1879.	
Hurt, Geo. K.	Thorntown	1889.	
Jones, A. B.	Lebanon	1887.	
Kane, J. M.	Rosston	1884.	
Little, P. B.	Elizaville	1895.	
Miller, A. O.	Lebanon	1882.	
Porter, J. R.	Lebanon	1873.	
Reagan, J. S.	Lebanon	1885.	
Rose, M. H.	Thorntown	1873.	
Schultz, W. H.	Lebanon	1893.	
Scull, D. C.	Lebanon	1879.	Retired.
Smith, C. H.	Lebanon	1874.	V-Pres. State So. '93
Steelsmith, J. M.	Terhune	1887.	Honorary.
Trowbridge, Ruse	Lebanon	1880.	Removed.
Umberline, C. D.	Reese's Mills	1885.	
Walker, D. R.	Reese's Mills	1878.	
Wrennick, G. T.	Lebanon	1891.	Removed.

Society meets on the first Tuesday of each month.

CARROLL COUNTY.

OFFICERS.	CENSORS.
Charles Angell, Sr., President.	C. E. Angell, Jr.
Chas. C. Crampton, Vice-President.	W. F. Sharrer.
Wickliffe Smith, Secretary.	L. Snyder.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Angell, Chas. Sr.	Pittsburg	1877.	
Angell, C. E. Jr.	Delphi	1882.	
Cochran, I. N.	Delphi	1896.	
Crampton, Charles C.	Delphi	1894.	
Sharrer, W. F.	Delphi	1877.	
Smith, Wickliffe	Delphi	1877.	
Snyder, L.	LaFayette	1877.	

Society meets on the first Saturday of each month.

CASS COUNTY.

OFFICERS.	CENSORS.
A. Coleman, President.	W. H. Bell.
J. W. Stewart, Vice-President.	Jos. G. Rogers.
J. Z. Powell, Sec'y and Treas.	B. D. Bradfield.

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Banta, H. J.	Logansport	1893.	
Bell, W. H.	Logansport	1873.	Pres. State So. '82.
Bradfield, B. D.	Logansport	1893.	
Busjahn, F. A.	Logansport	1878.	
Cady, N. W.	Logansport	1877.	
Coleman, A.	Logansport	1893.	
Gould, E. P.	Royal Center	1895.	
Hermann, A. J.	Logansport	1888.	
Hermann, John	Logansport	1874.	
Hessler, Robt.	Logansport	1894.	
Holloway, W. A.	Logansport	1893.	
Lybrook, W. E.	Young America	1887.	
Milligan, J. W.	Logansport	1894.	
Powell, J. Z.	Logansport	1874.	
Rogers, Joseph G.	Logansport	1894.	
Stevens, B. C.	Logansport	1873.	
Stewart, J. W.	Logansport	1894.	
Thomas, L. C.	Logansport	1889.	
Tucker, A. W.	Logansport	1893.	Removed.

Society meets on the last Thursday of each month.

CLARK COUNTY.

OFFICERS.

Joseph Zuerner, President.
David H. Coombs, Vice-President.
J. Trueman Davis, Sec'y and Treas.

CENSORS.

Davis L. Field.
W. D. Conn.
Samuel D. Hazzard.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Carr, F. M.	Oregon	1895.	
Coombs, D. H.	Charlestown	1896.	
Conn, W. D.	Otisco	1896.	
Bottorf.	Charlestown	1896.	Suspended.
Davis, J. T.	Jeffersonville	1892.	
Field, D. L.	Jeffersonville	1896.	
Graham, T. A.	Jeffersonville	1877.	
Graham, O. P.	Jeffersonville	1891.	
Haymaker, G. W.	Charlestown	1882.	
Henning, R.	Jeffersonville	1889.	
Hazzard, S. D.	Charlestown	1893.	
Jones, Cad.	Charlestown	1896.	
McClure, D.	Jeffersonville		Honorary. Deceased.
Martin, F. A.	Jeffersonville	1896.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Nichols, J. M	Selersburg	1895.	
Peyton, D. C	Jeffersonville	1886.	
Reynolds, J. M	Memphis	1885.	
Ruddell, I. N	Jeffersonville	1881.	
Sharp, Harry	Jeffersonville	1896.	
Sheets, W. H	Jeffersonville	1877.	
Stockwell, John	Charlestown	1895.	
Wells, F. M	Charlestown	1894.	
Work, W. F	Charlestown	1896.	
Williams, L. L	Jeffersonville	1893.	
Zuerner, Joseph	Jeffersonville	1895.	

Society meets every three months, second Tuesday in April, July, October and January. (Hereafter.)

CLAY COUNTY.

OFFICERS.

Robert H. Culbertson, President.
Jacob F. Smith, Vice-President.
Frederick Nussel, Secretary.
Richard Gantz, Treasurer.

CENSORS.

Thomas F. Menaugh.
Thomas A. Glasgo.
James A. Modesitt.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Benell, Charles	Diamond	1892.	
Culbertson, Robert	Brazil	1892.	Honorary.
Finley, Geo. W	Harmony	1891.	
Freed, M. A	Clay City	1892	
Gantz, Robert	Brazil	1891.	
Gifford, Joseph C	Brazil	1892.	
Glasgo, Thomas A.	Brazil	1891.	
Holmes, Benjamin F	Asherville	1891.	
James, Oliver	Cory	1894.	
Menaugh, Thomas F	Brazil	1893.	
Modesitt, James A	Clay City	1891.	
Moss, J. K	Ashboro	1896.	
Nall, Albert J	Hoosierville	1895.	
Nussel Frederick	Brazil	1891.	
Oliver, J. B	Brazil	1894.	
Rundall, A. E	Centre Point	1891.	
Smith, Jacob F	Brazil	1891.	
Veach, Patrick H	Staunton	1893.	

Society meets on the second Wednesday of each month at 2 p. m., Brazil, Ind.

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DAVIESS COUNTY.

OFFICERS.

J. L. Moore, President.
E. W. Hilburn, Vice-President.
C. C. McCown, Secretary.
C. C. McCown, Treasurer.

CENSORS.

D. B. Smoot.
E. W. Hilburn.
W. C. Williford.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Faith, A. H.	Linton		
Gers, Henry	Washington		
Hilburn, E. W.	Washington		
Knapp, A. B.	Washington		
Moore, J. L.	Washington		
Moore, C. C.	Washington		
Millis, E. D.	Plainville		
McCown, C. C.	Washington		
McPhearson, S. L.	Montgomery		
Smoot, D. B.	Glendale		
Winton, C. F.	Washington		
Williford, W. C.	Washington		
Williford, G. W.	Washington		
Yenne, C. H.	Washington		

Society meets on the first Thursday of each month.

DEARBORN COUNTY.

OFFICERS.

J. D. Gatch, President.
Marc L. Bond, First Vice-President.
H. H. Sutton, Second Vice-President.
Jno. W. House, Secretary.
Jno. W. House, Treasurer.

CENSORS.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Boersig, Jos. A.	Lawrenceburg		
Bond, R. B.	Aurora		
Bond, Marc L.	Aurora		
Bond, E. P.	Lawrenceburg		Honorary.
Bowers, A. J.	Moores Hill		
Craig, T. E.	Lawrenceburg		
Chamberlain, S. B.	Lawrenceburg		
Davis, J. R.	Batesville		Honorary.
Duncan, W. F.	Kyle		
Freeland, J. L.	Weisburg		
Freeman, E. D.	Osgood		Honorary

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Fermier, P. G.	Weisburg		
Gatch, J. D.	Lawrenceburg		
Heaton, Conley	Aurora		
Henry, W. C.	Aurora		
House, J. W.	Lawrenceburg		
Newport, C.	Sunman		Honorary.
Rectanus, F.	Aurora		
Sale, F. H.	Aurora		
Sutton, H. H.	Aurora		
Walters, Albert	Lawrenceburg		
Walter, Carl G.			Deceased.

Society meets on the last Tuesday of each month.

DECATUR COUNTY.

OFFICERS.	CENSORS.
Geo. S. Crawford, President.	Wm. H. Wooden.
W. H. Wooden, Vice-President.	
I. H. Alexander, Secretary.	
I. H. Alexander, Treasurer.	

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Alexander, I. H.	Greensburg		
Crawford, Geo. S.	Clifty P. O.		
Wooden, Wm. H.	Greensburg		

DE KALB COUNTY.

OFFICERS.	CENSORS.
A. B. Darbey, President.	T. G. Matheney.
W. F. Shumaker, Vice-President.	J. E. Showalter.
F. M. Hines, Secretary.	M. M. Bowen.
V. M. Swarts, Treasurer.	

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Baxter, J. C.	Auburn	1896.	
Bennett, J. B.	Butler	1893.	
Bowen, M. M.	Corunna	1891.	
Carey, W. W.	Butler	1896.	
Carpenter, W. P.	Butler	1894.	
Clevenger, J. A.	Garrett	1896.	
Darbey, A. B.	Waterloo	1883.	
Fanning, F. W.	Butler	1882.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Ford, J. H	Auburn	1882.	Honorary.
Hines, F. M	Auburn	1893.	
Hines, L. A	Auburn	1895.	
Hines, W. L	St. Joe	1894.	
Matheney, T. G	Auburn	1882.	
Morr, J. W	Auburn	1894.	Removed to Albion.
Philips, A. F	Corunna	1895.	
Sebring, D. A	Auburn	1882.	
Shook, N. J	Spencerville	1894.	Suspended.
Showalter, J. E	Waterloo	1894.	
Shumaker, W. F	Butler	1894.	
Stamets, Z. H	Auburn	1892.	
Stewart, C. S	Garrett	1882.	
Swarts, D. J	Auburn	1882.	
Swarts, V. M	Auburn	1896.	
Yount, J. S	Ashley	1896.	

Society meets on the first Thursday of each month.

DELAWARE COUNTY.

OFFICERS.

G. W. Bucklin, President.
S. M. Reid, Vice-President.
U. G. Poland, Secretary.
Geo. R. Green, Treasurer.

CENSORS.

G. W. H. Kemper.
L. L. Ball.
I. N. Trent.
W. J. Boyden.
Anna Lemon Griffin.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Allen, Seth	Shideler	1894.	
Ball, L. L	Muncie	1895.	
Bearn, U. S	Muncie	1896.	
Bell, John M	New Burlington	1895.	Suspended.
Bowles, T. J	Muncie	1878.	
Boyden, W. J	Muncie	1892.	Suspended.
Bucklin, G. W	Muncie	1892.	
Cecil, A. A	Muncie	1891.	
Cottrell, G D	Muncie	1890.	Suspended.
Cowing, Hugh A	Muncie	1890.	
Dill, N. C	DeSoto	1896.	
Downing, J. R	Yorktown	1882.	
Driscoll, William E	Muncie	1886.	
Dunn, W. H	Gaston	1893.	
Frazer, Chas	Muncie	1896.	
Griffin, Anna Lemon	Muncie	1894.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Good, A. H.	Muncie	1882.	
Green, Geo. R.	Selma	1878.	
Jackson, F G.	Muncie	1889.	
Harris, Jesse M.	Muncie	1896.	Honorary.
Jeffrey, H. S.	Reeds	1896.	
Kemper, G. W. H.	Muncie	1878.	Pres. State Soc. '86.
Leech, G. D.	Muncie	1894.	
Mann, E. B.	Muncie	1894.	
Mansfield, T. J.	Royerton	1890.	
Marshall Ruben.	Cowan	1878.	
McKinney, D. R.	Cowan	1896.	
Poland, U. G.	Muncie	1895.	
Powers, U. G.	Albany	1896.	
Reasoner, O. I.	Muncie	1890.	
Reid, S. M.	Muncie	1889.	
Searcy, G. H.	Muncie	1891.	
Shively, A. H.	Yorktown	1896.	
Smith, Chas. W.	Selma	1884.	
Shideler, Joseph K.	Muncie	1894.	Suspended.
Trent, Isaac N.	Muncie	1889.	
Winans, H. M.	Muncie	1890.	

Society meets on the first Friday of each month.

DUBOIS COUNTY.

OFFICERS.	CENSORS.
G. P. Williams, President.	W. R. McMahan.
H. W. Stork, Vice-President.	E. A. Glezen.
P. H. Kempf, Secretary.	C. W. Schwartz.
P. H. Kempf, Treasurer.	E. J. Kempf.
	Victor Knapp.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
B. B. Brannock.	Jasper	1891.	
Glezen, E. A.	Ireland	1874.	
Jenkins, J. M.	Portersville	1893.	
Johnson, L. B.	Ireland	1894.	
Kempf, E. J.	Jasper	1878.	
Kempf, P. H.	Ferdinand	1883.	
Knapp, Victor.	Ferdinand	1889.	
Lukemeyer, E. G.	Huntingburg	1895.	
McMahan, W. R.	Huntingburg	1874.	
Ramsbrock, C. R.	Huntingburg	1892.	
Salb, J. P.	Jasper	1881.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Schwartz, C. W.....	Huntingburg.....	1874.	
Stork, H. W.....	Holland.....	1878.	
Williams, G. P.....	Huntingburg.....	1874.	
Wollenmann, A. G....	Huntingburg.....	1891.	

Society meets on the first Tuesday of May and October.

ELKHART COUNTY.

OFFICERS.

Chas. H. Niman, President.
G. W. Spohn, Vice-President.
Metius M. Eckelman, Secretary.
Metius M. Eckelman, Treasurer.

CENSORS.

Wm. E. Bowman.
Stephen M. Cummings.
Metius M. Eckelman.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Adams, Frank P.....	Elkhart.....	1896.	
Baumgartner, Albert J.	Elkhart.....	1895.	Suspended.
Bower, C. C.....	Elkhart.....	1891.	
Bowman, Wm. E.....	Elkhart.....	1889.	
Cassell, Elizabeth H...	Elkhart.....	1894.	Removed.
Chester, George B.....	Elkhart.....	1891.	Withdrawn.
Clark, L. W.....	Elkhart.....	1891.	Deceased.
Cook, J. Albert.....	Goshen.....	1896.	
Cummins, Stephen M..	Elkhart.....	1882.	
Dreese, Charles L.....	Goshen.....	1892.	
Eckelman, F. C.....	Elkhart.....	1882.	
Eckelman, M. M.....	Elkhart.....	1892.	
Frink, C. W.....	Elkhart.....	1891.	Expelled.
George, Wm. M.....	Elkhart.....	1894.	
Goodrich, Chas D.....	Elkhart.....	1894.	Expelled.
Hani, W. F.....	Elkhart.....	1894.	
Hauenstein, Geo. W...	Elkhart.....	1889.	
Hoopingarner, G. B...	Elkhart.....	1894.	
Inks, John S.....	Nappanee.....	1895.	
Jennings, J. W.....	Millersburg.....	1882.	
Latta, M. M.....	Goshen.....	1882.	
Miller, D. L.....	Goshen.....	1886.	
Neal, W. A.....	Elkhart.....	1882.	
Niman, Chas H.....	Elkhart.....	1893.	
Sensenich, A. S.....	Wakarusa.....	1883.	Suspended.
Short, I. W.....	Elkhart.....	1890.	Withdrawn.
Snapp, J. Albert.....	Millersburg.....	1896.	
Spohn, G. W.....	Elkhart.....	1891.	
Teters, B. F.....	Middleburg.....	1896.	
Werner, J. F.....	Elkhart.....	1894.	
Work, I. A.....	Elkhart.....	1882.	

Society meets on the first and third Thursdays of each month.

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FAYETTE COUNTY.

OFFICERS.

L. L. Dillman, President.
F. J. Ford, Treasurer.
V. D. Ludwick, Secretary.

CENSORS.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Chitwood, Joshua	Connersville	1879	
Dillman, L. D.	Connersville	1882.	
Ford, T. J.	Connersville	1893	
Gregg, V. H.	Connersville	1879.	Deceased.
Hamilton, S. H.	Connersville	1879.	
Ludwick, V. D.	Connersville	1893	
Shepard, S. D.	Everton	1884	
Sipe, R. W.	Orange	1882.	
Wyman, Chas.	Everton	1880.	Honorary.

Society meets first Thursday of each month.

FLOYD COUNTY.

OFFICERS.

Robert N. Harris, President.
J. F. Weathers, Vice-President.
John L. Stewart, Secretary.
John L. Stewart, Treasurer.

CENSORS.

Charles Bowman.
George H. Cannon.
F. H. Wilcox.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bowman, Charles	New Albany	1878.	
Cannon, George H.	New Albany	1878.	
Clapp, Wm. A.	New Albany	1878.	
Cook, Chas P.	New Albany	1883.	
Davis, J. M.	Greenville	1881.	
Davis, C. P.	Galena	1895.	
Daniels, William	Corydon	1895.	
Easley, E. P.	New Albany	1878.	
Harris, Robert N.	New Albany	1890.	
Hazelwood, John	New Albany	1894.	
McIntyre, C. W.	New Albany	1882.	
Maienthal, B. L.	New Albany	1891.	
Neat, T. C.	New Albany	1881.	
Sigmon, Edwin L.	New Albany	1887.	
Sloan, John	New Albany	1878.	V-Pres. State So. '56
Starr, W. L.	New Albany	1881.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Stewart, John L.	New Albany	1879.	
Weathers, J. F.	New Albany	1893.	
Wilcox, F. H.	New Albany	1890.	
Wolf, H. S.	New Albany	1892.	

Society meets on the first Thursday of each month.

FOUNTAIN COUNTY.

OFFICERS.	CENSORS.
C. L. Meyers, President.	Scott McNeil.
G. S. Jones, Secretary.	J. W. Mock.
G. S. Jones, Treasurer.	Geo. C. Hayes.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Armstrong, L. P.	Newton	1876.	
Fine, E. M.	Veedersburg	1869.	
Hayes, George C.	Hillsboro	1867.	
Henderson, T. M.	Covington	1896.	
Henderson, J. T.	Covington	1896.	
Jones, George S.	Covington	1867.	
McNeil, Scott	Veedersburg	1876.	
Mock, J. W.	Covington	1878.	
Myers, C. L.	Covington	1896.	
Moore, P. B.	Kingman	1882.	
Rowland, George	Covington	1867.	
Saunders, F. E.	Perrysville	1893.	
Shoaf, F. A.	Yeddo	1893.	
Spining, A. L.	Wallace	1895.	

Society meets on the first Thursday of April and October at 10 a. m.; also, at the call of the Secretary.

GIBSON COUNTY.

OFFICERS.	CENSORS.
W. W. Blair, President.	F. H. Maxam.
M. P. Hollingsworth, Vice-President.	R. S. Anderson.
A. R. Burton, Secretary.	F. Blair.
Geo. C. Kendle, Treasurer.	

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Anderson, S. R.	Princeton	1893.	
Burton, A. R.	Princeton	1882.	
Blair, F.	Princeton	1886.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Blair, W. W.	Princeton	1874.	
Hollingsworth, M. P.	Princeton	1893.	
Kendle, George C.	Princeton	1882.	
Mason, G. C.	Oakland City	1880.	
Maxam, F. H.	Princeton	1887.	
Shoptaugh, S. H.	Princeton	1874.	
Strickland, George.	Francisco	1894.	

Society meets on the last Friday of each month.

GRANT COUNTY.

OFFICERS.	CENSORS.
B. F. Ludlum, President.	Wm. Flynn.
J. Levi Lord, Secretary.	Lewis Williams.
M. T. Shively, Treasurer.	A. Henly.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Ayers, S. D.	Marion	1850.	Honorary.
Barns, W. C.	Marion	1875.	
Bartley, R. W.	Marion	1891.	
Borden, C. B.	Marion	1891.	
Conley, L. H.	Gas City	1894.	
Corey, Lavanner.	Van Buren	1862.	
Corey, L. J.	Van Buren	1875.	
Cotton, C. C.	Elwood	1891.	Removed.
Cronkhite, C. C.	Marion	1890.	
Crumrine, I. S. J.	Landess	1895.	
Dale, B. C.	Marion	1894.	Honorary.
Daniels, G. W.	Sweetser	1877.	
Eckert, Chas.	Marion	1890.	
Fankboner, W. A.	Marion	1891.	
Fisk, J. T.	Indianapolis	1894.	Removed.
Flynn, Wm.	Marion	1876.	
Francis, W. R.	Marion	1891.	
Hamilton, A. A.	Marion	1872.	
Henly, Alpheus.	Fairmount	1866.	
Hollis, Samuel.	Upland	1881.	
Hollis, Mrs. E. A.	Upland	1890.	
Horne, S. S.	Jonesboro	1869.	
Horne, B. S.	Marion	1895.	Removed.
Hubbard, W. H.	Monrovia	1884.	Removed.
Kimball, A. D.	Marion	1857.	Honorary.
Kimball, T. C.	Marion	1868.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Kimball, G. D.	Marion	1892.	
Knight, J. C.	Jonesboro	1882.	
Kyle, J. J.	Marion	1892.	
Landess, G. A.	Van Buren	1887.	
Lawshe, I. F.	Swayzee	1886.	
Lord, J. Levi.	Marion	1882.	
Ludlum, B. F.	Marion	1887.	
McKinney, G. W.	Jonesboro	1879.	
Meek, John A.	Jonesboro	1850.	Honorary.
Miller, Harry.	Marion	1894.	Honorary.
Moore, C. V.	Fairmount	1878.	
Nolder, S. M.	Fairmount	1892.	
Patterson, J. W.	Fairmount	1890.	
Powell, Mrs. N. Bainbridge.	Marion	1895.	
Powell, A. E.	Marion	1895.	
Pugh, J. W.	Upland	1890.	
Reasoner, H. D.	Marion	1863.	Honorary.
Ross, Justin P.	Marion	1887.	Deceased.
Shively, M. T.	Marion	1874.	
Strong, J. A.	Gas City	1894.	Removed.
Seal, I. N.	Hackleman	1878.	
Slater, Geo F.	Upland	1896.	
Stout, O. L.	Upland	1883.	
Vance, C. E.	Gas City	1892.	
Vigus, Chas. P.	Fairmount	1895.	
Webster, E. C.	Marion	1896.	
Wharton, W. L.	Matthews	1892.	
Whitson, E. M.	Jonesboro	1883.	
Whitson, John S.	Jonesboro	1895.	
Wilson, J. E.	Point Isabel	1895.	
Williams, Lewis.	Marion	1857.	
Wimmer, J. M.	Marion	1895.	
Wilson, Olive.	Fairmount	1891.	
Williamson, P. E.	Sweetser	1883.	

Society meets on the fourth Tuesday of each month.

GREENE COUNTY.

OFFICERS.	CENSORS.
Jacob B. Young, President.	H. R. Lawder.
H. R. Lawder, Vice-President.	P. M. Cook.
Wm. R. Cravens, Secretary.	Elmer Shirts.
H. A. Little, Ass't Secretary.	
S. C. Cravens, Treasurer.	

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Beatty, William H.	Worthington	1896.	
Cook, Peter M.	Solsberry	1894.	
Cravens, Samuel C.	Bloomfield	1894.	
Cravens, William R.	Bloomfield	1894.	
Gray, John W.	Bloomfield	1896.	
Little, H. A.	Linton	1896.	
Lowder, H. R.	Bloomfield	1896.	
Mulane, Joseph.	Lyons	1894.	
McCabe, H. H.	Worthington	1896.	
Norvall, Horace V.	Bloomfield	1896.	
Simmons, J. H.	Lyons	1896.	
Shirts, Elmer.	Lyons	1896.	
Sherwood, E. T.	Linton	1896.	
Thomas, G. A.	Linton	1896.	
Wheeler, Thomas.	Bloomfield	1894.	
Young, Jacob B.	Newark	1894.	

Society meets quarterly. Annual meeting second Thursday in April.

HAMILTON COUNTY.

OFFICERS.

S. C. Doul, President.
J. A. Axline, Vice-President.
C. H. Tomlinson, Secretary.
C. H. Tomlinson, Treasurer.

CENSORS.

Z. H. Fodrea.
V. E. Andrew.
W. B. Graham.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Andrew, V. E.	Cicero	1895.	
Axline, J. A.	Noblesville	1891.	
Benson, J. S.	Noblesville	1873.	Suspended.
Corphey, J. M.	Noblesville	1889.	Honorary.
Cottingham, Chas.	Noblesville	1896.	
Doul, S. C.	Westfield	1873.	
Fodrea, Z. H.	Westfield	1890.	
Graham, W. B.	Noblesville	1873.	
Haworth, M. C.	Noblesville	1873.	
Hershey, F. C.	Carmel	1894.	
Hershey, R. C.	Carmel	1878.	
Soehr, E. C.	Noblesville	1873.	
Johnson, H. V.	McKinville, Ore.	1883.	Honorary.
Laehr, E. C.	Noblesville	1873.	
Parr, J. N.	Jolietville	1874.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Parr, T. E	Jolietville	1896.	
Pettijohn, Fred	Westfield	1896.	
Smith, H. B	Olio	1887.	Suspended.
Tomlinson, C. H	Cicero	1895.	
Whitisell, P. P	Clarksville	1873.	Deceased.

Society meets on the first Tuesday of each month.

HANCOCK COUNTY.

OFFICERS.

John D. Cory, President.
O. C. Neier, Vice-President.
C. K. Bruner, Secretary.
C. K. Bruner, Treasurer.

CENSORS.

J. M. Ely.
S. A. Troy.
J. A. Comstock.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Alford, Charles H	Fortville	1891.	Removed from Co.
Barnes, C. A	Greenfield	1896.	From Marion Co. So.
Bruner, Charles K	Greenfield	1886.	
Bruner, Mary J	Greenfield	1885.	
Butchel, Jacob	New Palestine	1887.	
Comstock, James A	Greenfield	1889.	
Cook, Benjamin H	Wilkinson	1891.	
Cory, John D	McCordsville	1891.	
Ely, James M	New Palestine	1874.	
Ely, Lucian C	New Palestine	1884.	
Griffin, Loyal B	Greenfield	1894.	
Hervery, Samuel W	Fortville	1888.	
Howard, Noble P. Sr.	Greenfield	1874.	Deceased. V. P. St Soc. 1877.
Justice, John H	Greenfield	1892.	
Justice, W. A	Edan	1892.	
Johnston, W. R	Charlottsville	1896.	
Kirkhoff, C. H	New Palestine	1874.	Suspended.
King, Warren R	Greenfield	1874.	
Larrimore, J. M	Greenfield	1890.	
Lummis, J. E	Maxwell	1895.	
Neier, Oliver C	New Palestine	1894.	
Pratt, C. C	Willow	1890.	Suspended.
Selman, John W	Greenfield	1893.	
Troy, Samuel A	Milners' Corner	1874.	

Society meets on the first Tuesday of each month at 1 p. m.

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HENDRICKS COUNTY.

OFFICERS.

W. T. Lawson, President.
W. H. White, Vice-President.
H. C. Hill, Secretary.
H. C. Hill, Treasurer.

CENSORS.

C. A. White.
Simeon Martin.
Joel T. Barker.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Adams, T. J.	North Salem		Suspended.
Barker, Joel T.	Danville	1876.	
Bartholomew, B.	Danville		Suspended.
Brill, J. H.	Pittsboro		
Carter, Amos.	Plainfield	1890.	
Doan, J. M.	Coatesville	1896.	
Dryden, Thomas F.	Clayton	1876.	Deceased.
Farabee, C. E.	Danville	1880.	
Grimes, W. T.	Coatesville		Removed.
Harvey, W. I.	Plainfield	1891.	
Hoadley, W. J.	Danville	1876.	
Hunt, Stephen.	Coatesville		
Hill, H. C.	Danville	1896.	Removed.
Hunt, Tilman.	Plainfield	1896.	
Jessup, Maria.	Friendswood	1891.	Suspended.
Lawson, W. T.	Danville	1879.	
Manners, J. I.	Cartersburg	1896.	Removed.
Martin, Simeon.	North Salem	1891.	
Osborn, J. A.	New Winchester	1876.	
Parker, M. G.	Danville	1877.	
Reagan, J. S.	Plainfield	1879.	
Seaton, G. W.	Clayton		
White, C. A.	Danville	1883.	
White, W. H.	Amo		

HENRY COUNTY.

OFFICERS.

John Rea, President.
F. C. Hess, Vice-President.
E. S. Ferris, Secretary.
E. S. Ferris, Treasurer.

CENSORS.

H. Benedict.
H. M. Crouse.
G. W. Burke.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bailey, G. D.	Spiceland	1879.	
Bailey, L. Lavinia.	Spiceland	1896.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Bailey, Rachel, S.....	Spiceland.....	1880.	
Benedict, H.....	Springport.....	1879.	
Boor, W. A.....	New Castle.....	1879.	Honorary.
Boor, W. F.....	New Castle.....	1879.	
Burke, G. W.....	New Castle.....	1879.	
Crouse, H. M.....	Knightstown.....	1882.	
Ferris, E. S.....	New Castle.....	1885.	
Ferris, S.....	New Castle.....	1879.	
Graf, O. O.....	Knightstown.....	1893.	Suspended.
Gronendyke, T. W.....	New Castle.....	1879.	
Hess, F. C.....	Cadiz.....	1882.	
Kirk, E. E.....	Spiceland.....	1891.	
Rea, John.....	New Castle.....	1879.	
Winston, L. V.....	Knightstown.....	1893.	

Society meets on the second Thursday in February, April, June, August, October and December.

HOWARD COUNTY.

OFFICERS.

A. J. Bates, President.
H. C. Miller, Vice-President.
J. B. Moore, Secretary.
J. W. Wright, Treasurer.

CENSORS.

L. A. Simmons.
W. H. Martin.
R. H. Ross.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bates, A. J.....	Kokomo.....		
Cox, Edgar.....	Kokomo.....		
Frierwood, W. H.....	Greentown.....		
Hulle, W. H.....	Center.....		
Kern, Lewis.....	Kokomo.....		
LaMar, Knepple.....	Kokomo.....		
McClurg, W. H.....	Kokomo.....		
Martin, W. H.....	Kokomo.....		
Miller, H. C.....	Greentown.....		
Miller, L. C.....	Alto.....		
Moore, Emma W.....	Kokomo.....		
Moore, J. B.....	Kokomo.....		
Moulder, J. M.....	Kokomo.....		
Powell, E. W.....	Greentown.....		
Puckett, J. L.....	Kokomo.....		
Richmond, C.....	Kokomo.....		Honorary.
Ross, J. H.....	Kokomo.....		

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Ross, R. H.	Cassville		
Scott, G. B.	Greentown		
Simmons, L. A.	Kokomo		
Smith, R. H.	Kokomo		
Thorne, J. C. F.	Kokomo		
Wilson, R. I.	Kokomo		Honorary.
Wright, J. W.	Kokomo		

Society meets on the second Tuesday of each month.

HUNTINGTON COUNTY.

OFFICERS.	CENSORS.
W. C. Chaffee, President.	W. F. Carson.
W. F. Carson, Vice-President.	H. C. Grinnel.
Chas. L. Wright, Secretary.	E. H. Leyman.
Chas. L. Wright, Treasurer.	

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Carson, W. C.	Huntington	1883.	
Chaffee, W. C.	Huntington	1883.	
Chinoweth, G. F.	Mt. Etna	1892.	Suspended.
Dorsey, F. P.	Huntington	1895.	Removed.
Fisher, E. S.	Markle	1886.	
Grayston, B. H. B.	Huntington	1883.	Suspended.
Grayston, C. E.	Huntington	1883.	Suspended.
Grayston, F. S. C.	Markle	1883.	Suspended.
Grinnel, H. C.	Markle	1883.	
Leyman, E. H.	Huntington	1883.	
Mitchell, S. P.	Mt. Etna	1895.	Suspended.
Scott, N. W.	Huntington	1883.	Suspended.
Shaffer, A. H.	Huntington	1883.	
Wright, Chas. L.	Huntington	1886.	
Wright, Ervin	Huntington	1886.	

Society meets on the second Tuesday of each month.

JACKSON COUNTY.

OFFICERS.	CENSORS.
M. F. Gerrish, President.	D. J. Cummins.
H. A. Cummins, Vice-President.	Geo. O. Barnes.
N. N. Shipman, Secretary.	Albert May.
N. N. Shipman, Treasurer.	

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Barnes, Geo. O.....	Courtland.....	1877.	
Brown, F. W.....	Seymour.....	1894.	
Charlton, S. H.....	Seymour.....	1877.	Pres. State So. '88.
Cummins, D. J.....	Houston.....	1876.	
Cummins, H. A.....	Mooney.....	1884.	
Curtiss, W. H.....	Pekin, China.....	1886.	Honorary.
Galbraith, T. S.....	Seymour.....	1879.	Removed.
Gerrish, M. F.....	Seymour.....	1884.	
May, Albert.....	Crothersville.....	1895.	
Osterman, O. G.....	Dudleytown.....	1883.	
Rains, G. W.....	Jonesville.....	1881.	
Reed, E. P.....	Ewing.....	1876.	
Ritter, J. K.....	Brownstown.....	1896.	
Rodman, Wm. M.....	Brownstown.....	1880.	
Ruddick, L.....	Seymour.....	1877.	
Shields, J. M.....	Seymour.....	1888.	
Shipman, N. N.....	Seymour.....	1880.	
Whitehead, W. E.....	Brownstown.....	1880.	

Society meets on the first Thursdays of March, June, October and December.

JAY COUNTY.

OFFICERS.

J. F. Dicks, President.
Samuel Mason, Vice-President.
D. O. Murray, Secretary.
M. T. Jay, Treasurer.

CENSORS.

C. C. Mills.
J. M. Bosworth.
C. M. Mackey.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Arthur, C. S.....	Portland.....	1881.	
Bosworth, J. M.....	Pennville.....	1883.	
Clevenger, B. F.....	Red Key.....	1881.	Suspended.
Conner, N. F.....	Red Key.....	1881.	Suspended.
Davis, R. P.....	Portland.....	1888.	
Dickes, J. T.....	Portland.....	1885.	
Dickes, Phillip.....	Greenville, O.....	1887.	Honorary.
Fertich, G. W.....	Dunkirk.....	1883.	
Fitzpatrick, Dr.....	Dunkirk.....	1896.	Honorary.
Garber, J. B.....	Dunkirk.....	1892.	
Hall, J. W.....	Portland.....	1884.	
Horn, W. P.....	Pennville.....	1889.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Jay, M. T.	Portland	1889.	
Ridder, J. F.	New Mt. Pleasant	1882.	
Mackey, C. W.	Portland	1883.	
Mazore, Samuel	Pennville	1883.	
Mills, C. C.	Red Key	1895.	
Minton, W. A.	Dunkirk	1894.	Removed.
Murray, D. P.	Dunkirk	1894.	
Shepherd, G. W.	Red Key	1881.	
Sims, I. G.	Portland	1885.	

Society meets on the second Friday of each alternate month, beginning with April.

JEFFERSON COUNTY.

OFFICERS.

C. C. Copeland, President.
J. Cooperider, Sec'y and Treas.

CENSORS.

Wm. A. McCoy.
Charles Ryker.
J. H. Christie.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Burdsal, C. A.	Lancaster	1892.	
Christie, J. H.	Canaan	1887.	
Cooperider, J.	Madison	1887.	Sec. and Treas.
Copeland, C. C.	North Madison	1889.	
Copeland, R. M.	Bennington	1889.	
Cornett, W. T. S.	Madison	1874.	Honorary. Pres. Sta
Forshee, T. W.	Madison	1882.	Soc. 1849.
Freeman, Wm.	Madison	1888.	Withdrawn.
Hampton, S. E.	Milton, Ky.	1888.	
Lewis, J. F.	Dupont	1889.	Suspended.
McCarthy, W. W.	Canaan	1889.	
McCoy, Wm. A.	Madison	1888.	
Ryker, Chas.	Manville	1882.	

Society meets on the first Mondays of March, June, Septembe: and December.

JENNINGS COUNTY.

OFFICERS.

W. J. Mitchill, President.
W. A. Wildman, Vice-President.
W. H. Stemm, Secretary.
W. H. Stemm, Treasurer.

CENSORS.

A. B. Light.
J. H. Green.
W. H. Richardson.

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Adams, S. D.....	Brewersville.....	1892.	
Amick, C. C.....	Hayden.....	1892.	
Case, W. W.....	Zenas.....	1892.	
Fall, Wm. R.....	North Vernon.....	1892.	
Gaddy, N. D.....	Lovett.....	1882.	
Gaddy, Orville.....	Paris Crossing.....	1884.	
Green, J. H.....	North Vernon.....	1884.	
Hanna, J. L.....	Paris Crossing.....	1893.	
Jones, J. H.....	Butlerville.....	1896.	
Kendrick, N. C.....	Butlerville.....	1886.	
Light, A. B.....	North Vernon.....	1892.	
Miller, T. E. F.....	Westport.....	1895.	Suspended.
Mitchell, W. J.....	Vernon.....	1884.	
Nighswander, M.....	Hayden.....	1892.	
Payne, T. H.....	Nebraska.....	1896.	
Phillips, C. W.....	Scipio.....	1892.	
Riley, W. F.....	Sardinia.....	1893.	Deceased.
Richardson, N.....	Vernon.....	1893.	
Richardson, W. H.....	Vernon.....	1892.	
Roberson, D. W.....	Deputy.....	1892.	
Stemm, W. H.....	North Vernon.....	1886.	
Tobias, J. M.....	North Vernon.....	1896.	
Wetherell, G. M.....	Scipio.....	1895.	Removed
Wildman, W. A.....	San Jacinto.....	1892.	

Society meets on the first Tuesday of each month.

JOHNSON COUNTY.

OFFICERS.

J. H. Lanham, President.
J. M. Wishard, Vice-President.
H. J. Hall, Secretary.
Miss Accie Mathews, Treasurer.

CENSORS.

Z. Carnes.
H. K. Myers.
P. K. Dobyns,.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Byers, R. S.....	Trafalgar.....	1895.	
Carnes, Z.....	Greenwood.....	1895.	
Craig, J. A.....	Greenwood.....	1895.	
Cupp, M. F.....	Edinburg.....	1895.	
Dobyns, P. K.....	Franklin.....	1895.	
Donnell, T. C.....	Franklin.....	1895.	
Hall, W. C.....	Franklin.....	1895.	

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Hall, H. J.	Franklin	1895.	
Hibbs, Irwin	Nineveh	1895.	
Kegley, John L.	Stone's Crossing	1896.	
Lanham, J. H.	Edinburg	1895.	
Mathews, Miss Accie	Franklin	1895.	
Myers, D. K.	Edinburg	1895.	
Phipps, I. H.	Whiteland	1895.	
Phipps, D. L.	Needham	1895.	
Surface, O. B.	Stone's Crossing	1895.	
Terhune, R. W.	Whiteland	1895.	
Wishard, J. M.	Greenwood	1895.	
Wallace, B.	Franklin	1895.	
Whitesides, L. L.	Franklin	1895.	
Willian, R. Day	Trafalgar	1895.	

Society meets on the first Thursday of February, May, August and November.

KNOX COUNTY.

OFFICERS.

J. A. Cullop, President.
Joseph F. Somes, Vice-President.
W. H. Davenport, Secretary.
John H. Hensley, Treasurer.

CENSORS.

P. H. Caney.
L. B. Slatey.
J. L. Reeve.
W. E. Kessinger.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Alexander, J. A.	Bruceville	1888.	
Anderson, W. B.	Vincennes	1895.	
Beard, S. C.	Vincennes	1885.	
Beckes, L. M.	Vincennes	1888.	
Benham, C. W.	Vincennes	1895.	
Caney, P. H.	Vincennes	1893.	
Cullop, J. A.	Bruceville	1893.	
Daily, D. R.	Vincennes	1896.	
Davenport, W. H.	Vincennes	1888.	
Davis, Royse	Decker	1878.	
Dukate, J. B. D.	Vincennes	1895.	
Foulks, Chas. A.	Vincennes	1895.	Removed.
Grigsby, Wm. S.	Oaktown	1882.	
Held, H. W.	Vincennes	1894.	
Hensley, Jno. H.	Vincennes	1881.	
Jones, W. R.	Bicknell	1891.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Knapp, Geo	Vincennes	1896.	
Kessinger, W. E	Sanborn	1893.	
McDowell, L. C	Freelandville	1893.	
McDowell, M. M	Vincennes	1896.	
McGauhey, A. J	Freelandville	1893.	
Mcloy, Jas. N	Vincennes	1896.	
Moore, M. G	Vincennes	1894.	
Pickle, J. M	Sanborn	1894.	Removed.
Reeve, J. L	Edwardsport	1888.	
Robinson, Jas. L	Wheatland	1896.	
Smith, H. M	Vincennes	1875.	
Somes, Joseph F	Vincennes	1895.	
Sprinkle, W	Oaktown	1893.	
Staley, L. B	Bicknell	1885.	
Swartzel, J. A	Vincennes	1887.	

Society meets on the second Tuesday of July, October, January and April.

KOSCIUSKO COUNTY.

OFFICERS.

F. M. Pearman, President.
J. M. Bash, Vice-President.
C. W. Burket, Secretary.
C. W. Burket, Treasurer.

CENSORS.

I. J. Bicknell.
T. J. Shackleford.
W. R. Schoonover.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bash, J. M	Warsaw	1878.	
Bicknell, I. J	Milford	1878.	
Burket, C. W	Warsaw	1875.	
Defrees, H. J	Nappanee	1881.	
Fermier, P. G	Leesburg	1895.	
Howat, W. F	Hammond	1895.	
Ketchum, Geo	Claypool		
King, O. H	Pierceton	1881.	
Long, C. R	Pierceton	1881.	
Lyons, J. W	Leesburg	1896.	
McDonald, A. C	Warsaw	1895.	
Moody, T. F	Pierceton	1888.	
Pearman, F. M	Palestine	1888.	
Potter, J. E	Milford	1892.	
Shackleford, T. J	Warsaw	1881.	
Schoonover, W. R	Warsaw	1889.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Terry, P. E.	Silver Lake	1896.	
Webber, I. B.	Warsaw	1875.	
White, R. P.	Warsaw		

Society meets on the call of the President.

LAGRANGE COUNTY.

OFFICERS.

Francis P. Griffith, President.
E. G. White, Vice-President.
John L. Short, Secretary.
A. R. Wyatt, Treasurer.

CENSORS.

W. H. Short.
D. W. Dryer.
I. J. Vaughan.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Dancer, John	South Milford	1877.	Deceased.
Dryer, D. W.	LaGrange	1885.	
Eash, S. M.	Shipshewana	1894.	
Griffith, Frances P.	LaGrange	1882.	
Grubb, A. G.	Mingo	1893.	
Hostetter, A. J.	Shipshewana	1896.	
Newnam, H. M.	South Milford	1889.	
Rawles, J. W.	Mingo	1877.	
Schrock, J. J.	Emma	1891.	
Short, John L.	LaGrange	1877.	
Short, W. H.	LaGrange	1877.	
Vaughan, I. J.	Topeka	1890.	
White, E. G.	LaGrange	1877.	
Wyatt, A. R.	LaGrange	1889.	

Society meets on the last Thursday in January, April, July and October.

LAWRENCE COUNTY.

OFFICERS.

E. E. Mitchell, President.
J. D. Byens, Secretary.
S. W. Smith, Treasurer.

CENSORS.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Burton, G. W.	Mitchell		
Byens, J. D.	Mitchell		
Duncan, J. B.	Bedford		
Emery, C. H.	Bedford		

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Names.	*Residence.*	*Admitted.*	*Remarks.*
McFarlin, J. F.....	Williams.....		
Martin, R. E.....	Hiltonville.....		
Mitchell, E. E.....	Avoca.....		
Rariden, C. E.....	Bedford.....		
Smith, S. W.....	Leesville.....		
Smith, W. H.....	Bedford.....		

Society meets on the first Thursday of each quarter.

MARION COUNTY.

OFFICERS.

H. M. Lash, President.
G. J. Cook, Vice-President.
Thos. B. Noble, Secretary.
H. A. Denson, Treasurer.
Frank B. Wynn, Ass't Sec.

CENSORS.

Evan Hadley.
L. C. Cline.
G. J. Cook.
A. W. Brayton.
W. V. Morgan.
Guido Bell.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Allen, Wesley.....	West Newton.....	1878.	
Anthony, J. R.....	Indianapolis.....	1892.	
Barnes, A. L.....	Southport.....	1891.	
Barnhill, J. F.....	Indianapolis.....	1895.	
Bates, J. M.....	Indianapolis.....	1895.	
Beck, W. S.....	Irvington.....	1888.	
Bell, Guido.....	Indianapolis.....	1883.	
Benepe, J. L.....	Indianapolis.....	1896.	
Beraner, J. M.....	Indianapolis.....	1893.	
Brayton, A. W.....	Indianapolis.....	1880.	
Brown, B. A.....	Brightwood.....	1893.	
Brown, J. R.....	Indianapolis.....	1891.	
Browning, W. J.....	Indianapolis.....	1892.	
Bryan, D. C.....	Indianapolis.....	1885.	
Bryan, T. N.....	Indianapolis.....	1875.	
Burckardt, Louis.....	Indianapolis.....	1893.	
Canfield, B. V.....	Indianapolis.....	1890.	
Carson, J. H.....	Indianapolis.....	1893.	Suspended.
Carson, L. O.....	Trader's Point.....	1879.	
Carter, C. A.....	Indianapolis.....	1896.	
Castor, H. C.....	Indianapolis.....	1890.	
Charlton, F. R.....	Indianapolis.....	1897.	
Chatard, Rt. Rev. Bish	Indianapolis.....	1880.	Honorary.

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Cline, L. C.	Indianapolis	1886.	
Cole, Alb. M.	Indianapolis	1897.	
Combs, G. W.	Indianapolis	1884.	
Cook, Geo. J.	Indianapolis	1892.	
Crist, D. O.	Indianapolis	1879.	
Crose, S. E.	Indianapolis	1890.	
Culver, D. M.	Indianapolis	1896.	
Davis, Eugene	Indianapolis	1896.	
De Hass, T. W.	Indianapolis	1892.	
Deitch, O. S.	Indianapolis	1892.	
Denson, H. A.	Indianapolis	1890.	
Dunlap, J. M.	Indianapolis	1893.	
Dunlavy, I. C.	Indianapolis	1891.	
Dunning, L. H.	Indianapolis	1890.	
Durham, C. O.	Indianapolis	1896.	
Earp, S. E.	Indianapolis	1882.	
Eastman, Joseph	Indianapolis	1875.	
Eastman, T. B.	Indianapolis	1895.	
Edenharter, G. F.	Indianapolis	1885.	
Ferguson, C. E.	Indianapolis	1892.	
Ferguson, F. C.	Indianapolis	1882.	
Feree, S. L.	Indianapolis	1890.	
Field, M. H.	Indianapolis	1875.	
Fletcher, C. I.	Indianapolis	1881	
Fletcher, W. B.	Indianapolis	1885.	
Furniss, Henry	Indianapolis	1896.	
Furniss, S. A.	Indianapolis	1895.	
Gabe, H. E.	Indianapolis	1893.	
Galloway, C. E.	Indianapolis	1893.	
Garver, J. J.	Indianapolis	1891.	
Gaston, J. N.	Indianapolis	1884.	Honorary.
Gaylord, H. G.	Indianapolis	1891.	
Geis, J. F.	Indianapolis	1893.	
Hadley, Evan	Indianapolis	1875.	
Haslep, Marie	Indianapolis	1896.	
Hays, F. W.	Indianapolis	1881.	
Haynes, W. H.	Indianapolis	1870.	
Heath, F. C.	Indianapolis	1891.	Sec. State Soc.
Hervey, Ella	Indianapolis	1896.	Deceased.
Hervey, J. W.	Indianapolis	1875.	
Hodges, E. F.	Indianapolis	1880.	
House, G. F. H.	Indianapolis	1892.	
Hunt, G. E.	Indianapolis	1892.	
Hunt, P. G. C.	Indianapolis	1892.	Hon'y. Deceased.

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Hurty, J. N.	Indianapolis	1882.	Honorary.
Jameson, Henry	Indianapolis	1875.	
Jameson, P. H.	Indianapolis	1875.	
Jeffries, W. E.	Indianapolis	1875.	
Jennings, W. L.	Bridgeport	1893.	
Kahlo, G. D.	Indianapolis	1893.	
Kahlo, H. C.	Indianapolis	1892.	
Kimberlin, A. C.	Indianapolis	1889.	
Kitchen, J. M.	Indianapolis	1878.	Honorary.
Knerr, C. B.	Indianapolis	1892.	
Kolmer, John	Indianapolis	1896.	
Lash, H. M.	Indianapolis	1892.	
Lambert, J. A.	Indianapolis	1895.	
Leathers, D. A.	Indianapolis	1895.	
Lewis, E. R.	Indianapolis	1884.	
Long, J. B.	Indianapolis	1884.	
Long, R. W.	Indianapolis	1893.	
Lukenbill, J. C.	Indianapolis	1892.	
McLeay, J. L.	Indianapolis	1897.	
Marsee, J. W.	Indianapolis	1878.	
Marsh, E. B.	Indianapolis	1895.	Removed.
Masters, J. L.	Indianapolis	1893.	
Maxwell, Allison	Indianapolis	1878.	
Mckay, J. L.	Indianapolis	1897.	
Metcalf, C. N.	Indianapolis	1885.	Deceased.
Moffett, E. D.	Indianapolis	1888.	
Moore, S. H.	Indianapolis	1896.	
Morgan, W. V.	Indianapolis	1883.	
Morris, Minor	Indianapolis	1894.	
Morrison, F. A.	Indianapolis	1881.	
Morrow, J. E.	West Indianapolis	1890.	
McDonald, W. B.	New Augusta	1891.	
McNab, Philip	Indianapolis	1891.	
McShane, J. T.	Indianapolis	1892.	
Nash, G. W.	Indianapolis	1889.	
Nichols, J. D.	Indianapolis	1895.	
Noble, Thos. B.	Indianapolis	1895.	
Oliver, J. H.	Indianapolis	1881.	
Page, L. F.	Indianapolis	1889.	
Pantzer, H. O.	Indianapolis	1882.	
Patterson, A. W.	Indianapolis	1878.	
Payne, J. H.	Julietta	1887.	
Pettijohn, O. B.	Indianapolis	1882.	
Pfaff, O. G.	Indianapolis	1884.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Potter, Theodore	Indianapolis	1889.	
Ratliffe, B.	West Newton	1891.	
Reyer, E. C.	Indianapolis	1891.	
Rice, W. G.	Indianapolis	1896.	
Ridpath, H. W.	Indianapolis	1894.	
Ritter, C. L.	Indianapolis	1889.	
Rooker, J. L.	Castleton	1880.	Deceased.
Ross, David	Indianapolis	1897.	
Row, G. S.	Indianapolis	1896.	
Rowe, L. M.	Indianapolis	1882.	
Scherer, S. P.	Indianapolis	1891.	
Schaefer, C. R.	Indianapolis	1890.	
Shank, W. L.	Indianapolis	1895.	Removed.
Scott, J. T.	Indianapolis	1896.	
Seaton, W. H.	Indianapolis	1896.	
Sloan, G. W.	Indianapolis	1892.	Honorary.
Smith, Martha J.	Indianapolis	1890.	
Smith, Mary	Indianapolis	1888.	
Spicer, J. W.	Acton	1883.	
Spink, Mary A.	Indianapolis	1887.	
Servoss, Geo. L.	Indianapolis	1895.	
Sterne, A. E.	Indianapolis	1893.	
Stiles, J. A.	Indianapolis	1894.	
Stillson, J. O.	Indianapolis	1894.	
Stockton, Sarah	Indianapolis	1884.	
Stone, R. F.	Indianapolis	1881.	
Storch, L. A. E.	Indianapolis	1892.	
Stoutenbery, Elizabeth.	Indianapolis	1896.	
Sutcliff, J. A.	Indianapolis	1878.	
Taylor, J. H.	Indianapolis	1880.	
Thomas, W. H.	Indianapolis	1885.	
Thompson, D. A.	Indianapolis	1883.	
Thompson, J. L.	Indianapolis	1876.	
Thompson, W. C.	Indianapolis	1876.	Honorary.
Todd, L. L.	Indianapolis	1878.	
Tomlin, W. S.	Indianapolis	1896.	
Tomlinson, Virginia	Indianapolis	1890.	Deceased.
Wadsworth, A.	Castleton	1894.	
Wagner, T. A.	Indianapolis	1884.	
Walker, I. C.	Indianapolis	1878.	
Waterman, L. D.	Indianapolis	1875.	Pres. State Soc.
Wands, Wm.	Indianapolis	1875.	1877. Honorary.
Ward, A. O.	Indianapolis	1896.	
Ward, C. L.	Indianapolis	1896.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Watters, P. J.....	Indianapolis.....	1887.	
Wilson, A. L.....	Indianapolis.....	1888.	
Wishard, W. H.....	Indianapolis.....	1875.	Pres. State Soc. '88.
Wishard, W. W.....	Indianapolis.....	1875.	
Woodburn, F. C.....	Indianapolis.....	1888.	Sec. State Soc. '95.
Woodburn, J. H.....	Indianapolis.....	1875.	Pres. State Soc. '84
Woolen, G. V.....	Indianapolis.....	1875.	Ex-Sec. State Soc.
Wright, Wm.....	Indianapolis.....	1892.	
Wylie, B. M.....	Indianapolis.....	1896.	
Wynn, F. B.....	Indianapolis.....	1894.	

Society meets on Tuesday evening of each week.

MADISON COUNTY.

OFFICERS.	CENSORS.
John Wallace Cook, President.	O. W. Brownback.
Fred Jenner Hodges, Vice-President.	Geo. F. Chittenden.
Ed. W. Chittenden, Secretary.	L. M Strauss.
Joseph E. Hall, Treasurer.	

Names.	*Residence.*	*Admitted.*	*Remarks.*
Alexander, L. E.....	Pendleton.....		
Armfield, T. O.....	Elwood.....		
Branch, C. N., Jr.....	Anderson.....		
Brownback, O. W.....	Pendleton.....		
Charles, Etta.....	Summitville.....		
Chittenden, Ed. W.....	Anderson.....		
Chittenden, Geo. F.....	Anderson.....		
Cook, John Wallace....	Pendleton.....		
Druley, O. E.....	Anderson.....		
Edwins, S. W.....	Elwood.....		
Fairfield, W. J.....	Anderson.....		
Fattic, John B.....	Anderson.....		
Fisher, J. M.....	Lapel.....		
French, J. W.....	Frankton.....		
Fritz, P. L.....	Alexandria.....		
Fussell, Lundy.....	Markleville.....		
Garretson, W. M.....	Perkinsville.....		
Gibson, J. J.....	Alexandria.....		
Hall, J. E.....	Alexandria.....		
Harter, J. H.....	Anderson.....		
Harter, W. J.....	Anderson.....		
Heath, W. N.....	Anderson.....		
Hodges, Fred Jenner...	Anderson.....		
Hunt, M. V.....	Anderson.....		

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Hunt, W. J	Anderson		
Jones, H. E	Anderson		
Keller, F. G	Alexandria		
Kneale, W. W	Anderson		
Littler, J. M	Alexandria		
Miley, I	Anderson		
Moore, J. R	Lapel		
Nourse, F. P	Alexandria		
Otto, A. E	Alexandria		
Perce, B. H	Anderson		
Schaffer, A. R	Alexandria		
Stewart, J	Anderson		
Strauss, L. M	Alexandria		
Suman, Wm	Anderson		
Tobias, A. W	Elwood		
Van Meter, I. N	Florida		
Wickersham, N. L	Anderson		
Williams, Chas. F	Summitville		

Society meets on the first Tuesday in January, April, July and October.

MARSHALL COUNTY.

OFFICERS.	CENSORS.
B. W. S. Wiseman, President.	Jacob Kaszer.
J. W. Eidson, Vice-President.	O. A. Rea.
J. H. Wilson, Secretary.	S. W. Gould.
J. H. Wilson, Treasurer.	

MEMBERS.

Aspinall, Novitas B	Plymouth	1896.	
Borton, T. A	Plymouth	1881.	
Blount, R. D	Wheeler	1896.	Porter Co.
Eidson, J. W	Bourbon	1884.	
Eley, Lorenzo D	Tippecanoe	1894.	Suspended.
Gould, S. W	Argus	1878.	
Hamilton, J. J	Lapaz	1880.	
Holtzendorff, A. C	Plymouth	1881.	
Johnson, Luther	Bourbon	1889.	
Kaszer, Jacob	Plymouth	1891.	
Kendall, J. T	Argus	1888.	
Leland, J. S	Argus	1878.	
Linn, T. T	Bourbon	1881.	Deceased.
Loring, S. C	Burr Oak	1888.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Moore, Allen	Lapaz	1883.	Removed.
Parker, B. W.	Bourbon	1882.	
Rea, O. A.	Marmont	1880.	
Strong, J. A.	Tyner City	1896.	
Wahl, Geo. F.	Bremen	1884.	
Wilson, J. H.	Plymouth	1878.	
Wiseman, B. W. S.	Marmont	1887.	
Younkman, A. B.	Bremen	1880.	

MARTIN COUNTY.

OFFICERS.

J. C. Trueblood, President.
W. H. Shirley, Vice-President.
T. A. Hays, Secretary.

CENSORS.

T. C. Dollens.
M. M. Dooley.
B. C. Wright.
G. M. Robinson.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Dollens, T. C.	Trinity	1895.	
Dooley, M. M.	Loogrotee	1895.	
Hays, T. A.	Burns City	1892.	
Robinson, G. M.	Loogrotee	1895.	
Shirley, W. H.	Shoals	1895.	
Trueblood, J. C.	Loogrotee	1895.	
Way, John W.	Alfredsville	1895.	
Whitley, James.	Bramble	1895.	Removed.
Wright, B. C.	Short	1895.	

MIAMI COUNTY.

OFFICERS.

W. H. Brenton, President.
A. F. Smith, Vice-President.
L. O. Malsbury, Secretary.
J. O. Ward, Treasurer.

CENSORS.

J. O. Malsbury.
O. P. Litzenberger.
H. V. Passage.

Bacon, D. N.	Bunker Hill	1895.	
Bash, Ira A.	Reserve	1894.	Removed.
Bloomfield, E. M.	Peru	1872.	Dropped.
Boggs, M. M.	Macy	1889.	
Brenton, W. H.	Peru	1872.	
Carl, O. V.	Waupecong	1896.	
Crunkleton, F. J.	Peru	1892.	Deceased.
Davis, G. W.	Miami	1889.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Dodds, A. J.	Mexico	1896.	
Fretz, J. C.	Deedsville	1887.	
Friermood, S. M.	North Grove	1892.	
Gilbert, J. L.	Bunker Hill	1895.	
Graham, B. R.	Peru	1874.	
Graves, A. E.	New Waverly	1895.	Honorary.
Griswold, E. H.	Peru	1894.	
Haifley, W. H.	Amboy	1895.	
Helm, C. J.	Peru	1889.	Dropped.
Helm, J. H.	Peru	1872.	Honorary.
Hoffman, G. E.	Macy	1894.	
Linville, L. M.	Peru	1895.	Deceased.
Litzenberger, O. P.	Converse	1889.	
Magruder, J. W.	Peru	1896.	
Malsbury, J. O.	Peru	1890.	
Malsbury, L. O.	Peru	1894.	
Marsh, S. S.	Santa Fe	1872.	Dropped.
Maughmer, G. C.	Waupecong	1889.	Removed.
Meek, J. A.	Bunker Hill	1872.	Honorary.
Miller, L. A.	Peru	1894.	
Moore, J. W.	Mexico	1891.	
McDowell, H. P.	Peru	1885.	Dropped.
Newell, J. W.	Denver	1887.	
Passage, H. V.	Peru	1888.	
Pence, Rollin.	Peru	1879.	Honorary.
Peters, J. B.	Perrysburg	1890.	
Ramsey, S. G.	Hooversburg	1890.	
Ridenour, D.	Chili	1889.	
Ridenour, D. C.	Peru	1894.	
Smith, A. F.	Waupecong	1885.	
Spooner, J.	Peru	1887.	
Swift, E. D.	Macy	1894.	
Wainscott, O. C.	Peru	1894.	
Ward, J. O.	Peru	1872.	
Wareham, J. W.	Gilead	1895.	
Watkins, F. H.	Peru	1889.	
Wilson, W. T.	Bunker Hill	1872.	Honorary.
Wilson, J. S.	Macy	1896.	
Zimmer, E. G.	Santa Fe	1891.	

Society meets on the last Friday of each month.

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MONTGOMERY COUNTY.

OFFICERS.

E. W. Keegan, President.
K. K. Straughn, Vice-President.
H. E. Greene, Secretary.
B. F. Hutchings, Treasurer.

CENSORS.

O. H. Jones.
W. H. Ristine.
R. D. Kelso.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Barcus, Paul J.	Crawfordsville	1893.	
Berryman, J. A.	Darlington	1887.	Deceased.
Davidson, J. F.	Crawfordsville	1887.	
Detchon, S. S.	New Richmond	1862.	
Greene, H. E.	Crawfordsville	1891.	
Griffith, Martha E. H.	Crawfordsville	1881.	
Griffith, T. J.	Crawfordsville	1865.	
Hurt, W. J.	Waynetown	1878.	Vice-P. State Soc.
Hutchings, B. F.	Crawfordsville	1881.	1895. Resigned.
Jones, O. H.	Crawfordsville	1875.	
Kelso, R. D.	Wareland	1893.	
Keegan, E. W.	Crawfordsville	1880.	
Leech, T. F.	Crawfordsville	1891.	Vice-P. State Soc.
Lidikay, C. J.	Ladoga	1896.	1893.
May, W. L.	Crawfordsville	1862.	
Ristine, W. H.	Crawfordsville	1880.	
Straughn, K. K.	Wareland	1896.	

Society meets quarterly first Tuesday of February, May, August and November.

MORGAN COUNTY.

OFFICERS.

A. S. Tilford, President.
M. F. Brackney, Vice-President.
Theo. Henson, Secretary.
Chas. Seaton, Treasurer.

CENSORS.

H. C. Robinson.
C. M. Lindley.
W. E. Hendricks.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Brackney, M. F.	Mooresville	1892.	
Cure, H. W.	Martinsville	1880.	
Farr, U. H.	Martinsville	1878.	
Hendricks, W. E.	Martinsville	1879.	
Henson, Theo.	Martinsville	1891.	
Lindley, C. M.	Brooklyn	1876.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Monical, G. S.	Martinsville	1896.	
Reagan, A. W.	Mooresville	1876.	
Robinson, H. C.	Martinsville	1876.	
Seaton, Charles	Martinsville	1880.	
Tilford, A. S.	Martinsville	1890.	

Society meets on the last Wednesday of February, April, June, August and October.

NOBLE COUNTY.

OFFICERS.

E. W. Knepper, President.
W. K. Mitchell, Vice-President.
W. F. Carver, Secretary.

CENSORS.

J. W. Hays.
J. L. Gilbert.
J. W. Luckey.
W. T. Green.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Carver, W. F.	La Otto	1895.	
Cook, H. W.	Avilla	1896.	
De Pew, E. W.	Wolf Lake	1882.	
Franks, Wm. H.	Ligonier	1883.	
Gilbert, J. L.	Kendallville	1882.	
Goodwin, C. P.	Rome City	1896.	
Green, T. C.	Albion	1886.	
Green, W. T.	Albion	1884.	
Hays, John W.	Albion	1883.	
Knepper, Edwin W.	Ligonier	1882.	
Lemmon, S. W.	Albion	1887.	
Luckey, J. W.	Wolf Lake	1895.	
Maloney, F. C.	Avilla	1882.	
Miller, B. E.	Albion	1891	
Mitchell, W. K.	Ligonier	1886.	
Moore, N. B.	Merriam	1891.	
Seymour, Calvin	Wawaka	1886.	
Shobe, Wm. R.	Ligonier	1882.	
Teal, Norman	Kendallville	1882.	
Teal, Geo. A.	Kendallville	1882.	
Tucker, H. G.	Cromwell	1882.	
Williams, W. S.	Kendallville	1885.	

Society meets on the first Tuesday after the first Monday of January, May and September.

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OWEN COUNTY.

OFFICERS.	CENSORS.
John M. Stucky, President.	H. A. Fox.
S. R. McKelvey, Vice-President.	Jacob Coble.
Allen Pierson, Secretary.	W. H. Rice.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Beaty, Wm. H	Worthington	1896.	Honorary.
Boling, Lewis	Spencer	1892.	Removed.
Coble, J.	Spencer	1885.	
Cox, N. D.	Spencer	1879.	
Fox, H. A.	Gosport	1893.	
Gantz, Thomas	Freedom	1891.	
Green, E. V.	Spencer	1893.	
Hickam, Wilford	Spencer	1884.	
Hinkle, J. S.	Coal City	1896.	
Jones, J. M.	Cataract	1880.	
McDonald, David	Quincy	1896.	
McIntosh, J.	Spencer	1896.	Honorary.
McKelvey, S. R.	Spencer	1884.	
Osgood, H. G.	Gosport	1892.	
Pierson, Allen	Spencer	1879.	
Pritchard, C. A.	Gosport	1888.	
Rice, W. H.	Cuba	1888.	
Sadler, W. C.	Spencer	1896.	
Smith, John W.	Gosport	1879.	
Spear, Albert	Spencer	1896.	Honorary.
Stucky, John M.	Gosport	1879.	
Stucky, F. V.	Gosport	1884.	
Wiles, F. M.	Indianapolis	1884.	
Yocum, Boaz	Arney	1893.	

Society meets on the first Tuesday of each month from April to October inclusive; from October to April every Friday at 7 p. m.

PARKE COUNTY.

OFFICERS.	CENSORS.
J. Y. Lynch, President.	The Society.
Alonzo Martin, Vice-President.	
W. H. Gillum, Secretary.	
E. L. Vancleave, Treasurer.	

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Caplinger, C. A.	Marshall	1882.	
Goldsberry, J. A.	Bloomingdale	1874.	
Gilham, W. H.	Rockville	1874.	
Goss, Marion	Rockville	1874.	
Lynch, J. Y.	Rosedale	1892.	
Martin, Alonzo	Bellmore	1887.	
Morris, A. W.	Rockville	1890.	
Morris, C. C.	Rockville	1888.	
Peare, R. C.	Bellmore	1894.	
Rogers, H. C.	Rockville	1894.	
Vancleave, E. L.	Rockville	1891.	

Society meets on the last Friday of each month.

PERRY COUNTY.

OFFICERS.

Wm. Cluthe, President.
Chas. H. Mason, Vice-President.
R. H. Hutchason, Secretary.

CENSORS.

Wm. H. Muelchi.
C. M. Brucker.
W. H. Muelchi.
R. H. Hutchason.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Allenbaugh, E. E.	Huff	1889.	
Brucker, Chas. M.	Tell City	1887.	
Cluthe, Wm.	Tell City	1887.	
Cox, C. E.	Cannelton	1891.	
Hutchason, R. H.	Cannelton	1890.	
Ladd, C. W.	Cannelton	1887.	Suspended.
Mason, Chas. H.	Tell City	1896.	
Muelchi, Wm. H.	Tell City	1893.	
Speidel, F. W.	Leopold	1892.	
Venneman, R. T.	Cannelton	1889.	

Society meets on the first Monday of each month.

PIKE COUNTY.

OFFICERS.

J. T. Smith, President.
E. S. Imel, Vice-President.
E. G. Burlingame, Secretary.
W. H. Hunter, Treasurer.

CENSORS.

J. R. Adams.
A. R. Byers.
T. W. Basinger.

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Adams, J. R	Petersburg	1876.	
Byres, A. R	Petersburg	1876.	
Basinger, T. W	Petersburg	1883.	
Burlingame, E. G	Petersburg	1896.	
Coleman, J. W	Union	1892.	
DeTarr, David	Winslow	1878.	Retired.
Fullinwider, C. H	Mt. Vernon	1885.	Removed.
Hunter, W. R	Petersburg	1893.	
Link, W. H	Petersburg	1884.	
Imel, E. S	Algiers	1892.	
Kime, J. T	Petersburg	1889.	
Smith, J. F	Glezen	1877.	
Smith, Wm	Glezen	1874.	

Society meets on the second Thursday of April, June, September and December.

PORTER COUNTY.

OFFICERS.	CENSORS.
J. R. Wilson, President.	E. F. Yohn.
A. P. Letherman, Vice-President.	R. D. Blount.
D. J. Loring, Secretary.	H. M. Evans.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Blount, Robley D	Wheeler	1895.	
Carson, J. C	Valparaiso		
Crawford, E. W	Hanna		
Evans, Horace M	Valparaiso	1895.	
Fravell, T	Westville	1894.	
Leason, G. M	Wanotah		
Letherman, Andrew P.	Valparaiso	1883.	
Loring, David J	Valparaiso	1883.	
Noland, P. D	Kouts		
Short, R. B	Union Mills		
Thayer, E. J	Union Mills		
Wilson, James R	Hebron	1895.	
Yohn, Edward F	Hebron	1895.	

POSEY COUNTY.

OFFICERS.	CENSORS.
Ernst Heusler, President.	S. O. Rawlings.
Thomas W. Wilson, Vice-President.	G. W. Welborn.
S. H. Pearse, Secretary.	C. Hicks.
S. H. Pearse, Treasurer.	

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Heusler, Ernst	Heusler P. O	1884.	
Hicks, C	Caborus	1877.	
Holton, W. M	New Harmony	1877.	
Huston, J. C	Mt. Vernon	1889.	
Krausgrill, Daniel	Wadesville	1879.	
Murphy, Edward	New Harmony	1877.	
Neal, B. E	New Harmony	1889.	
Pearse, S. H	Mt. Vernon	1877.	
Ramsey, D. C	Mt. Vernon	1881.	
Rawlings, S. O	New Harmony	1878.	
Spencer, E. V	Mt. Vernon	1877.	
Welborn, G. W	Stewartsville	1877.	
Williams, J. B	Grafton	1877.	
Wilson, John B	Stewartsville	1889.	
Wilson, Thomas W	New Harmony	1888.	

Society meets on the third Tuesday of April and October.

PUTNAM COUNTY.

OFFICERS.

P. S. Baker, President.
C. C. Collins, Vice-President.
S. W. Poole, Secretary.
L. M. Hannah, Treasurer.

CENSORS.

E. Hawkins.
B. F. Spurgeon.
F. H. Lammers.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Baker, P. S	Greencastle	1880.	
Batman, W. F	Ladoga	1883.	Removed.
Collins, C. C	Roachdale	1883.	
Cully, J. F	Bainbridge	1882.	
Evans, E. B	Greencastle	1877.	
Gillispie, J. F	Reelsville	1891.	
Hannah, L. M	Greencastle	1877.	
Harris, W. C	Roachdale	1881.	
Hawkins, E	Greencastle	1881.	
Lammers, F. H	Greencastle	1891.	
Mullimix, P	Cloverdale	1890.	Suspended.
Poole, G. W	Greencastle	1890.	
Preston, J. L	Cloverdale	1877.	
Pritchard, W. K	Cloverdale	1895.	
Smythe, G. C	Greencastle	1877.	
Spurgeon, B. F	Mt. Meridian	1888.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Terrell, W. H.	Fillmore	1889.	
Summers, W. F.	Raccoon	1896.	
Wood, N. S.	Roachdale	1890.	Removed.

Society meets on the second Tuesday of January, April, July and October.

RANDOLPH COUNTY.

OFFICERS.

L. N. Davis, President.
C. M. Kelley, Vice-President.
B. S. Hunt, Secretary.
J. T. Chenoweth, Treasurer.

CENSORS.

J. E. Markle.
L. N. Davis.
A. G. Rogers.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Blair, J. S.	Lynn	1879.	
Chenoweth, J. T.	Winchester	1876.	
Chenoweth, N. T.	Windsor	1876.	
Chenoweth, F. A.	Winchester	1895.	
Coffin, A.	Carlos City	1896.	
Cox, C. R.	Lynn	1895.	
Davis, L. N.	Farmland	1876.	
Evans, J. J.	Winchester	1876.	
Evans, C. S.	Union City	1880.	Suspended.
Farduhar, A. H.	Ridgeville	1876.	
Franks, H. P.	Losantville	1886.	
Frederick, G. W.	Ridgeville	1888.	Suspended.
Hunt, B. S.	Winchester	1894.	
Kelley, C. M.	Winchester	1887.	
McMaull, Chas.	Winchester	1891.	Removed.
Markle, J. E.	Winchester	1876.	Suspended.
Maroney, J. H.	Lynn	1887.	
Morgan, T. W.	Spartanburg	1895.	Suspended.
Nixon, John	Farmland	1888.	
Reynard, E. G.	Union City	1890.	Suspended.
Reynard, G.	Union City	1885.	Suspended.
Rogers, A. G.	Parker City	1880.	

Society meets on the second Tuesday of January, April, July and October.

RIPLEY COUNTY.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Freeman, E. D.	Osgood	1885.	

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RUSH COUNTY.

OFFICERS.

Wm. C. Smith, President.
R. R. Mitchell, Vice-President.
E. I. Wooden, Secretary.
F. G. Hackleman, Assistant Secretary.

CENSORS.

Jno. Moffett.
Jno. Arnold.
S. C. Thomas.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Arnold, John	Rushville	1876.	
Crippen, E. H	Milroy	1892.	Died since last report.
Graham, A. E	Richland	1894.	
Green, Lot	Rushville	1882.	
Hackleman, F. G	Rushville	1882.	
Inlow, J. J	Manilla	1876.	Died since last repor
Kennedy, Donald	Homer	1894.	
Lowden, S. A	Manilla	1893.	
McGee, Omar	Rushville	1885.	Suspended.
McGee, Wm. N	Rushville	1885.	
Mitchell, R. R	New Salem	1895.	
Moffett, John	Rushville	1876.	
Parsons, C. H	Rushville	1878.	
Paxton, J. T	Glennwood	1895.	
Rea, Chas. L	Falmouth	1893.	
Sexton, J. C	Rushville	1882.	
Sipe, John	Carthage	1894.	
Smith, I. F	Arlington	1895.	
Smith, Wm. C	Rushville	1894.	
Smith, Wm. H	Rushville	1876.	
Sparks, J. B	Carthage	1886.	Died since last report
Spurrier, J. H	Rushville	1876.	
Thomas, S. C	Milroy	1878.	
Wooden, E. I	Rushville	1889.	

Society meets on the first Monday of every month.

SHELBY COUNTY.

OFFICERS.

T. C. Kennedy, President.
H. M. Connelly, Vice-President.
Ovid L. Adams, Secretary.
R. R. Washburn, Treasurer.

CENSORS.

W. G. McFadden.
E. W. Leech.
Joseph Bowlby.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Adams, Ovid S	Shelbyville	1894.	
Booher, Daniel	Noah	1894.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Boone, B. H	Boggstown	1896.	
Bowlby, Joseph	Shelbyville	1888.	
Caldwell, J. C	Shelbyville	1894.	Honorary.
Campbell, Frank	Shelbyville	1895.	
Connelly, H. M	Flat Rock	1888.	
Cook, Chas. J	Gwynneville	1895.	
Drake, Morris	Shelbyville	1888.	
Furney, W. C	Morristown	1893.	
Green, J. W	Shelbyville	1888.	
Green, Will F	Shelbyville	1889.	
Hess, M. M	Morristown	1893.	
Inlow, I. N	Blue Ridge	1888.	
Kennedy, Don	Homer	1895.	Honorary.
Kennedy, Samuel	Shelbyville	1891.	
Kennedy, Thos. C	Shelbyville	1888.	
Leech, Eliot W	Shelbyville	1896.	
McCray, R. S	Morristown	1896.	
McFadden, Wm. G	Shelbyville	1888.	
Randolph, D. F	Waldron	1891.	
Robins, James P	Shelbyville	1896.	
Rubush, Thos. R	London	1888.	
Rucker, J. W	Shelbyville	1888.	
Sanford, J. H	Shelbyville	1893.	
Snider, J. W	Fairland	1889.	
Strickler, S. S	Boggstown	1888.	
Washburn, R. R	Waldron	1888.	
Wolf, J. G	Morristown	1888.	Honorary.

Society meets on the second Monday of each month.

STEUBEN COUNTY.

OFFICERS.

J. F. Cameron, President.
C. M. Dolph, Vice-President.
T. J. Creel, Secretary.
W. H. Waller, Treasurer.

CENSORS.

C. W. Goodale.
T. B. Williams.
H. D. Wood.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Cameron, J. F	Hamilton	1881.	
Creel, T. J	Angola	1893.	
Cunningham, H. L	Salem Center	1895.	
Dolph, C. M	Pleasant Lake	1889.	
Goodale, C. W	Metz	1885.	
Humphreys, F. B	Freemont	1892.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Kimmel, A. J.	Hudson	1890.	
Lane, W. H.	Angola	1889.	
Morr, J. E.	Orland	1895.	Suspended.
Ransburg, M. V.	Pleasant Lake	1881.	
Taylor, E. A.	York	1882.	
Waller, W. H.	Angola	1885.	
Weidner, Calvin	Angola	893.	Removed.
Williams, T. B.	Angola	1885.	
Wood, H. D.	Angola	1863.	
Wood, T. F.	Angola	1865.	

Society meets on the first and third Fridays of each month.

ST. JOSEPH COUNTY.

OFFICERS. CENSORS.

H. T. Montgomery, President.
F. P. Eastman, Vice-President.
H. F. Mitchell, Secretary.
J. B. Berbeling, Treasurer.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Boydsnee, Harry	South Bend		Suspended.
Brown, John R.	Sumption's Prairie	1888.	
Butterworth, C. M.	South Bend	1890.	
Berteling, J. B.	South Bend	1889.	
Barber, A. E.	Mishawaka	1893.	
Calvert, R. H.	South Bend	1895.	
Daugherty, C. A.	South Bend	1887.	
Denant, H. D.	Walkerton	1893.	
Dugdale, R. B.	South Bend	1893.	
Eastman, F. P.	South Bend	1893.	
Fink, H. A.	South Bend	1889.	
Greene, J. B.	Mishawaka	1887.	
Hill, G. S.	South Bend	1895.	
Hill, J. W.	South Bend	1888.	
Hager, W. A.	South Bend	1893.	
Lent, E. J.	Lakeville	1893.	
Lyon, T. B.	South Bend	1892.	
McNamara, D. W.	South Bend	1894.	
Montgomery, H. T.	South Bend	1887.	
Mitchell, H. F.	South Bend	1890.	
Moore, E. P.	South Bend	1895.	
Phillips, D. C.	South Bend	1895.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Potter, J. C.	South Bend	1895.	
Rennoe, C. A.	South Bend	1893.	
Stockwell, Sarah F.	South Bend	1888.	
Sawyer, F. M.	South Bend	1887.	
Stoltz, Chas.	South Bend	1893.	
Schafer, A. F.	South Bend	1888.	
Terry, C. C.	South Bend	1894.	
Todd, S. G.	Mishawaka	1891.	
Varier, J. A.	South Bend	1893.	
Wickham, W. A. R.	South Bend	1888.	

Society meets on the last Tuesday of each month.

SULLIVAN COUNTY.

OFFICERS.

R. H. Crowder, President.
A. Cushman, Vice-President.
Joseph Freeman, Secretary.
W. N. Thompson, Treasurer.

CENSORS.

J. J. Thompson.
S. D. Osborn.
R. H. Vancleave.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Crowder, R. H.	Sullivan	1895.	
Cushman, A.	Graysville	1895.	
Delashmutt, V. E.	Shelborn	1895.	
Durham, J. L.	Graysville	1895.	
Edwards, C. H.	Sullivan	1895.	
Freeman, Joseph.	Sullivan	1895.	
Harper, H. F.	Merom	1895.	
Hoover, L.	Paxton	1895.	
Kennedy, F. W.	Farmersburgh	1895.	
Lisman, J. W.	New Lebanon	1895.	
Neal, E. M.	Hymeria	1895.	
Osborn, S. D.	Shelborn	1895.	
Pirth, G. W.	Sullivan	1895.	
Thompson, J. J.	Sullivan	1895.	
Thompson, W. N.	Sullivan	1895.	
Van Cleve, R. H.	Farmersburgh	1895.	

Society meets on the first Wednesday of January, April, July and October.

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SWITZERLAND COUNTY.

OFFICERS.

Scott Culbertson, President.
L. W. Bear, Vice-President.
Hannah C. Rous, Secretary.
Hugh Thienband, Treasurer.

CENSORS.

H. L. Dalgleish.
H. Greenleaf.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Bear, L.	Vevay	1895.	
Culbertson, Scott	Moorefield	1895.	
Dalgleish, H. L.	Vevay	1895.	
Greenleaf, Hannibal	Markland	1895.	
Hayden, David	Sugar Branch	1895.	
Rous, Hannah C.	Vevay	1895.	
Thienband, Hugh	Vevay	1896.	
Van Osdol, John	Allensville	1895.	
Van Osdol, Dawson	Allensville	1895.	
Woolen, L. J.	Vevay	1895.	

Society meets on the first Monday of each month, January, February and March excepted.

TIPPECANOE COUNTY.

OFFICERS.

R. S. Tea, President.
R. B. Wetherill, Vice-President.
Geo. F. Keiper, Secretary.
Geo. F. Beasley, Treasurer.

CENSORS.

Geo. K. Throckmorton.
W. R. Moffit.
E. C. Davidson.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Beasley, Geo. F.	LaFayette	1877.	Pres. S. Soc. 1893.
Campbell, W. S.	West Point	1887.	
Davidson, E. C.	LaFayette	1892.	
Gray, James A.	LaFayette (West)	1892.	
Green, L. T.	Odell	1896.	
Irwin, L. M.	LaFayette	1882.	
Keiper, George F.	LaFayette	1890.	
Moffit, W. R.	LaFayette (West)	1880.	
O'Ferrall, R. M.	LaFayette	1884.	V-P. S. Soc. 1859.
Tea, R. S.	LaFayette	1896.	Deceased.
Throckmorton, Geo. K.	LaFayette	1890.	
Walker, W. S.	LaFayette	1877.	
Webster, J. C.	LaFayette	1878.	
Wetherill, R. B.	LaFayette	1881.	
Yager, J. W.	LaFayette	1896.	

Society meets on the first and third Mondays of each month.

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TIPTON COUNTY.

OFFICERS.	CENSORS.
Horace G. Read, President.	David P. Rubush.
Thos. W. Longfellow, Vice-President.	Nat C. Doan.
Rob. M. Recobs, Secretary.	Monroe L. Plough.
Rob. M. Recobs, Treasurer.	

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Amos, Edward M.....	Kempton.....	1896.	
Cochran, Thos. C.....	Sharpsville.....	1896.	
Collins, Geo. M.....	Tipton.....	1874.	
Doan, Nathaniel W....	Lancaster (New).....	1874.	
Dickey, Andrew S.....	Tipton.....	1896.	
Goar, Chas. S.....	Goldsmith.....	1890.	
King, Frank B.....	Windfall.....	1896.	
Longfellow, Thomas W	Hobbs.....	1894.	
McCreary, O. P.....	Windfall.....	1896.	
Newcomer, M. V. B...	Tipton.....	1896.	
Plaughe, onroe L.....	Goldsmith.....	1892.	
Powell, Jas. R.....	Tipton.....	1894.	
Read, Horace G.....	Tipton.....	1887.	
Rubush, David P.....	Sharpsville.....	1875.	
Recobs, Robt. M.....	Tipton.....	1895.	
Whelchel, Thos. C.....	Goldsmith.....	1878.	Suspended.

Society meets on the first Tuesday of June, August, October, December, February and April.

VANDERBURGH COUNTY.

OFFICERS.	CENSORS.
J. W. Compton, President.	Thomas E. Powell.
A. M. Hayden, Vice-President.	G. W. Varner.
Thomas Macer, Secretary.	T. Wertz.
Thomas Macer, Treasurer.	

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Achilles, W. E.....	Evansville.....	1886.	
Bacon, C. P.....	Evansville.....	1878.	
Begley, B. W.....	Englefield.....	1889.	
Binkley, J. F.....	Evansville.....		
Bryan, Tony L.....	Evansville.....	1886.	
Brose, L. D.....	Evansville.....	1895.	
Bitz, L. B.....	Evansville.....	1895.	
Cantrell, Francis A....	Evansville.....	1895.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Cleaveland, W. F.	Evansville	1894.	
Cluthe, Wm.	Evansville	1895.	
Compton, J. W.	Evansville	1878.	
Compton, M. J.	Evansville		
Corlew, R. M.	Evansville	1886.	Deceased.
Cottingham, J. E.	Evansville	1894.	
Glover, John S.	Evansville	1890.	
Hartloff, R.	Evansville	1886.	
Harrod, C. L.	Evansville	1895.	
Hayden, A. M.	Evansville	1895.	
Hodson, G. P.	Evansville	1886.	Suspended.
Jones, F. M.	Evansville	1896.	
Jacobson, Joseph	Evansville	1890.	Suspended.
Kerth, J. H.	Evansville	1890.	Suspended.
Knapp, A. J.	Evansville	1895.	
Knapp, Charles	Evansville	1883.	
Linthicum, Edward	Evansville	1878.	
Le Hardy, J. C. Jr.	Evansville	1895.	
Macer, Thomas	Evansville	1889.	
McClurkin, J. C.	Evansville	1888.	
McCoy, P. Y.	Evansville	1886.	
McCool, W. E.	Evansville	1895.	
McCutchan, John H.	Evansville	1895.	
McMahan, Agnes	Evansville	1889.	
Moutoux, C. G. R.	Kasson	1890.	
Norman, Seaton	Evansville	1890.	Removed.
Owen, A. M.	Evansville	1879.	
Owen, John E.	Evansville	1886.	
Powel, Thomas E.	Evansville	1886.	
Pritchett, W. S.	Evansville	1892.	
Schuyler, C. L.	Evansville	1887.	Suspended.
Snyder, K. S.	Evansville	1889.	Suspended.
Tepe, Geo. W.	Evansville	1895.	
Varner, Geo. W.	Evansville	1890.	
Walker, Edwin	Evansville	1882.	Pres. S. Soc. '92.
Weever, J. B.	Evansville	1887.	
Wertz, Toliver	Evansville	1891.	
Witting, A. P.	St. Joseph	1892.	
Warsham, Ludson	Evansville	1887.	
Young, G. M.	Evansville	1887.	

Society meets on the third Tuesday night of each month.

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VIGO COUNTY.

OFFICERS.

W. R. Mattox, President.
Walker Schell, Vice-President.
H. E. Hume, Secretary.
C. M. Smick, Treasurer.

CENSORS.

Leo. J. Weinstein.
J. R. Crapo.
J. P. Worrell.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Aikman, E. A	Clinton	1893.	
Bell, W. E	Terre Haute	1891.	
Brunker, Jas	Riley	1895.	
Carson, L. E	Prairieton	1896.	
Crapo, G. W	Terre Haute	1879.	
Crapo, J. R	Terre Haute	1879.	
Combs, M. R	Terre Haute	1896.	
Conley, Cornelia	Terre Haute	1896.	
DuPuy, Ch	Riley	1896.	
Eichelberger, W. C	Terre Haute	1881.	
English, J. P	Terre Haute	1895.	
Gloven, E. E	Terre Haute	1895.	
Garvey, P. S	Oakland	1896.	
Hume, H. C	Terre Haute	1894.	
Hunt, John	W. Terre Haute	1895.	
Hatfield, M	Terre Haute	1896.	
Hood, T. C	Dana	1896.	
Jenkins, W. O	Terre Haute	1884.	
Johnson, M. A	Terre Haute	1896.	
Keys, O. M	Dana	1896.	
Larkins, E. L	Terre Haute	1882.	
Link, J. E	Terre Haute	1889.	
McClain, L. S	Terre Haute	1895.	
Mason, T. A	Terre Haute	1892.	
Mattox, W. R	Terre Haute	1882.	
Moorhead, T. W	Terre Haute	1878.	
McAllister, E. B	Terre Haute	1896.	
Niblack, E	Terre Haute	1896.	
Patton, Madge	Terre Haute	1896.	
Payne, A. T	Terre Haute	1890.	
Plew, G. F	Hymeria	1896.	
Schell, Walker	Terre Haute	1890.	
Shaley, F. W	Terre Haute	1885.	
Spain, A. W	Terre Haute	1880.	
Stunkard, T. C	Terre Haute	1885.	
Swofford, B. F	Terre Haute	1879.	
Smick, C. M	Terre Haute	1895.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Thralls, J. T.	Hymeria	1896.	
Weinstein, L. J.	Terre Haute	1879.	
Willien, L. J.	Terre Haute	1879.	
Willis, J. R.	Terre Haute	1889.	
Worrell, J. P.	Terre Haute	1874.	
Wyeth, Chas.	Terre Haute	1892.	
White, C. M.	Clinton	1896.	
Weir, S. D.	Terre Haute	1896.	
Wiedman, F. E.	Terre Haute	1896.	
Young, S. J.	Terre Haute	1874.	
Zimmerman, C. F.	Terre Haute	1879.	

Society meets on the first Thursday of each month.

WABASH COUNTY.

OFFICERS.	CENSORS.
Henry Ader, President.	J. H. Ford.
Lorin W. Smith, Secretary.	A. J. Smith.
L. F. Jessup Smith, Treasurer.	P. G. Moore.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Ader, Henry	Somerset	1871.	
Biggerstaff, J. L.	Huntington		
Blount, Rufus F.	Wabash	1865.	
Brady, Thomson R.	Wabash	1871.	
Donaldson, E. F.	Wabash	1865.	
Ford, J. H.	Wabash	1872.	Pres. State Soc.
Houser, B. A.	Somerset	1893.	
Kantz, John	Lagro	1873.	
Lacy, J. P.	Wabash		
Lower, M. O.	North Manchester	1876.	
Mooney, H. C.	Laketon	1876.	
Moore, Perry G.	Wabash	1871.	
O'Neal, L.	Somerset	1859.	
O'Neal, Oren	Wabash	1892.	
Renner, W. E.	Urbanna	1893.	
Shaffer, Philip	N. Manchester	1894.	
Smith, A. J.	Wabash	1871.	
Smith, Mrs. L. F. J.	Wabash	1873.	
Smith, Lorin W.	Wabash		
Wilson, James	Wabash	1800.	

Society meets on the third Thursday of each month.

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WARRICK COUNTY.

OFFICERS.

P. N. Hoover, President.
L. G. Spradley, Vice-President.
W. A. Hewins, Secretary.
W. A. Hewins, Treasurer.

CENSORS.

D. A. DeForest.
C. J. Keegan.
T. B Jones.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
DeForest, D. A.	Boonville	1874.	
Hewins, W. A.	Chandler	1884.	
Hoover, P. N.	Boonville	1894.	
Jones, T. B	Lynville	1874.	
Keegan, C. J.	Canal	1874.	
Lett, A. O.	Newburgh	1894.	
McCoy, T. D.	Eby	1874.	Suspended.
Mills, W. H.	Canal	1885.	
Spradley, N. M.	Selvin	1892.	
Spradley, L. G.	Heilman	1895.	
Tucker, D. W.	Boonville	1889.	
Tyner, S. L.	Newburgh	1874.	
Wilson, W.	Yankeetown	1874.	
Wilson, Dalton.	Yankeetown	1895.	

Society meets on the second Tuesday of March, June, September and December.

WASHINGTON COUNTY.

OFFICERS.

H. C. Hobbs, President.
J. H. Oatley, Vice-President.
R. J. Wilson, Secretary.
R. J. Wilson, Treasurer.

CENSORS.

A. N. Spurgeon.
J. J. Mitchell.
T. H. B. Baker.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Armstrong, B. M.	Fredericksburg	1894.	
Baker, T. H. B.	Pekin		
Bare, Jno. R.	Salem		
Barnett, J. J.	Hardinsburg	1893.	
Bradshaw, A. E.	Beck's Mill		
Bright, Wm. H.	Martinsburg		
DeWeese, Geo. W.	Fredericksburg		
Henon, Thos. W.	Lesterville		
Hobbs, H. C.	Salem		
Howard, Samuel B.	Kossuth		
McPheeters, John.	Hardinsburg		

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Martin, R. W.....	Salem.....		
Mitchell, J. J.....	Canton.....		
Oatley, John H.....	New Philadelphia.....		
Paynter, H. M.....	Salem.....	1892.	
Paynter, L. W.....	Campbellsburg.....	1893.	
Purkhiser, W. J.....	Salem.....		
Rathbun, Chas.....	Kossuth.....		
Spurgeon, A. N.....	Kossuth.....		
Tucker, T. M.....			Dead.
Tucker, William.....			Removed.
Voyles, V. A.....	Salem.....	1894.	
Wilson, R. J.....	Salem.....		
Zaring, P. A.....	Tampica.....	1894.	

Society meets on the first Monday of each month.

WAYNE COUNTY.

OFFICERS.

Chas. Marvel, Acting President.
Geo. H. Grant, Secretary.
Jas. F. Hibberd, Treasurer.

CENSORS.

N. H. Ballard.
M. F. Johnson.
H. H. Weist.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Allen, J. B.....	Richmond.....	1883.	Removed.
Ballard, N. H.....	Richmond.....	1881.	
Bond, C. S.....	Richmond.....	1883.	Vice-Pres. and Acting Pres. S. S. '95.
Buntin, E. A.....	Greensfork.....	1887.	
Gabel, Harrison.....	Centerville.....	1877.	Honorary.
Gans, P. T.....	West Florence.....		Honorary.
Gifford, S. A.....	Richmond.....	1894.	Removed.
Grant, G. H.....	Richmond.....	1888.	
Hibberd, Jas. F.....	Richmond.....	1877.	Pres. S. Soc. '62; Pres. A. M. A. '94.
Hobbs, M. W.....	Richmond.....	1889.	Expelled.
Johnson, L. C.....	Fountain City.....	1879.	Hon'y. Withdrawn.
Johnson, Rhoda.....	Fountain City.....	1891.	Hon'y. Withdrawn.
Johnson, M. F.....	Richmond.....	1888.	
King, J. E.....	Centerville.....	1889.	
Latterner, F. H.....	Richmond.....	1894.	Removed.
Marvel, Chas.....	Richmond.....	1894.	
Mendenhall, W. O. N..	Richmond.....	1894.	
Mauk, J. R.....	Cambridge City.....	1875.	
Morrow, Sarah J.....	Richmond.....	1884.	
Smith, S. E.....	Richmond.....	1891.	

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Names.	*Residence.*	*Admitted.*	*Remarks.*
Stevenson, David W...	Richmond.....	1896.	
Swisher, Lottie.....	Cambridge City.....	1894.	
Tillson, Hosea.....	Centerville.....	1876.	Honorary.
Wampler, Jno. M.....	Richmond.....	1894.	
Weist, H. H.....	Richmond.....	1894.	
Weist, J. R.....	Richmond.....	1876.	Pres. S. Soc. '79.

Society meets on the second Wednesday of January, March, May, July, September and November.

WELLS COUNTY.

OFFICERS.	CENSORS.
Chas. E. Caylor, President.	L. H. Cook.
G. E. Fulton, Secretary.	L. A. Spaulding.
L. A. Spaulding, Treasurer.	F. W. Garrett.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Caylor, Charles E.....	Nottingham.....	1894.	
Cook, L. H.....	Bluffton.....	1895.	
Fulton, G. E.....	Bluffton.....	1878.	
Fulton, J. C.....	Bluffton.....	1878.	
Garrett, F. W.....	Liberty Center.....	1890.	
Goodwin, S. A.....	Nottingham.....	1888.	Removed.
Gorrell, Andrew G.....	Ossian.....	1896.	
Hessler, G. F.....	Tocsin.....	1889.	
Huffman, D. C.....	Craigville.....	1891.	Retired.
Mason, L.....	Bluffton.....	1878.	
Metts, J. I.....	Ossian.....	1878.	
Metts, A. H.....	Ossian.....	1878.	
Newman, M. N.....	Ossian.....	1878.	
Spaulding, L. A.....	Bluffton.....	1878.	
Weer, H. H.....	Bluffton.....	1891.	
Wilson, L. J.....	Domestic.....	1891.	

Society meets on the second Tuesday of each month.

WHITE COUNTY.

OFFICERS.	CENSORS.
W. O. Walker, President.	J. H. Reed.
J. J. Hanmore, Vice-President.	J. J. Hanmore.
M. T. Didlake, Secretary.	J. W. McAllister.
M. T. Didlake, Treasurer.	

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MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Brockway, C. T.	Brookston	1894.	
Carr, J. L.	Monon	1887.	
Clark, R. J.	Monticello	1895.	
Clayton, Geo. R.	Monon	1883.	
Cook, W. H.	Wolcott	1896.	
Didlake, M. T.	Monticello	1877.	
Hanmore, J. J.	Monticello	1894.	
Jones, A. B.	Burnettsville	1875.	
Kelley, D. M.	Brookston	1894.	
Lister, F. E.	Brookston	1894.	
Marcum, A. B.	Monon	1896.	
Medaris, John.	Brookston	1864.	
Morris, Geo. W.	Headlee	1894.	
Minnick, H. R.	Idaville	1895.	
McAllister, J. W.	Idaville	1891.	
Noland, J. W.	Buffalo	1891.	
Reed, J. H.	Burnettsville	1886.	
Quick, W. R.	Monticello	1895.	Removed.
Spencer, Wm.	Monticello	1866.	
Trowbridge, W. V.	Barnettsville	1895.	Honorary.
Walker, W. O.	Wolcott	1890.	

Society meets on the second Tuesday of June, August, October, December, February and April.

WHITLEY COUNTY.

OFFICERS.

D. E. Webster, President.
N. I. Kithcart, Secretary.
O. V. Schuman, Treasurer.

CENSORS.

D. T. Linvill.
Eli Eberhard.
F. M. Magers.

MEMBERS.

Names.	*Residence.*	*Admitted.*	*Remarks.*
Eberhard, Eli.	South Whitley	1883.	
Grisier, F. G.	Churubusco	1883.	
Ireland, M.	Columbia City	1883.	
Kithcart, N. I.	Columbia City	1883.	
Kirkpatrick, Daniel.	Larwill.	1896.	
Linvill, D. G.	Columbia City	1896.	
Magers, F. M.	Churubusco	1883.	
Merrimann, E.	South Whitley	1895.	
Morrison, T. Ray.	Churubusco	1896.	
Scott, J. W. C.	Hecla	1884.	
Schuman, O. V.	Columbia City	1895.	
Squires, Jas. W.	Churubusco	1895.	
Weber, Wm.	Columbia City	1883.	
Webster, D. E.	Columbia City	1883.	
Webster, M. W.	South Whitley	1896.	

Society meets on the second Tuesday of each month.

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PRESIDENTS AND VICE-PRESIDENTS

OF THE

INDIANA STATE MEDICAL SOCIETY

SINCE ITS ORGANIZATION.

PRESIDENTS.

Names.	*Residence.*	*Elected.*
L. H. Dunlap (temporary)	Indianapolis	1849
W. T. S. Cornett	Versailles	1849
A. Clapp	New Albany	1850
Geo. W. Mears	Indianapolis	1851
J. H. Brown	Lawrenceburg	1852
E. Deming	Lafayette	1853
Madison J. Bray	Evansville	1854
William Lomax	Marion	1855
Daniel Meeker	La Porte	1856
T. Bullard	Indianapolis	1857
Nathan Johnson	Cambridge City	1858
David Hutchinson	Mooresville	1859
B. S. Woodworth	Fort Wayne	1860
Theophilus Parvin	Indianapolis	1861
J. F. Hibberd	Richmond	1862
John Sloan	New Albany	1863
S. M. Linton	Columbus	1864
John Moffett (acting president)	Rushville	1864
M. H. Harding	Lawrenceburg	1865
W. Lockhart (acting president)	Danville	1865
Vierling Kersey	Richmond	1866
J. S. Bobs	Indianapolis	1867
Nathaniel Field	Jeffersonville	1868
Geo. Sutton	Aurora	1869
R. N. Todd	Indianapolis	1870

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Names.	*Residence.*	*Elected.*
H. P. Ayres	Fort Wayne	1871
Joel Pennington	Milton	1872
Isaac Casselberry	Evansville	1873
W. Hobbs	Knightstown	—
R. E. Haughton	Richmond	1874
J. J. Helm	Peru	1875
S. S. Boyd	Dublin	1876
L. D. Waterman	Indianapolis	1877
L. Humphreys	South Bend	1878
J. R. Weist	Richmond	1879
Benj. B. Newland (acting president)	Bedford	—
Thomas B. Harvey	Indianapolis	1880
Marshall Sexton	Rushville	1881
Wm. H. Bell	Logansport	1882
S. E. Munford	Princeton	1883
J. H. Woodburn	Indianapolis	1884
J. S. Gregg	Fort Wayne	1885
G. W. H. Kemper	Muncie	1886
H. Charlton	Seymour	1887
W. H. Wishard	Indianapolis	1888
J. D. Gatch	Lawrenceburg	1889
G. C. Smythe	Greencastle	1890
Edwin Walker	Evansville	1891
G. F. Beasley	Lafayette	1892
C. A. Daugherty	South Bend	1893
E. S. Elder	Indianapolis	1894
C. S. Bond, (acting president)	Richmond	1895
Miles F. Porter	Fort Wayne	1895
J. H. Ford	Wabash	1896

VICE-PRESIDENTS.

Names.	*Residence.*	*Elected.*
N. Johnson (temporary)	Cambridge City	1849
L. Ryan (temporary)	Anderson	1849
J. W. Florer (temporary)	Alamo	1849
C. Wallace (temporary)	Indianapolis	1849
A. Clapp	New Albany	1849
N. Johnson	Cambridge City	1849
L. Dunlap	Indianapolis	1849
Dr. Farquher	Wabash	1849
William Lomax	Marion	1850
R. Curran	Indianapolis	1850

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Names.	*Residence.*	*Elected.*
William Davidson	Madison	1850
W. H. Hitt	Vincennes	1850
H. M. Dowling	New Albany	1851
S. Grimes	Delphi	1851
J. Pennington	Milton	1851
Charles Parry	Indianapolis	1851
William Byford	Evansville	1852
William Davidson	Madison	1852
V. Kersey	Milton	1852
T. Bullard	Indianapolis	1852
N. Johnson	Cambridge City	1853
James McLelland	Jefferson Ctty	1853
M. H. Harding	Lawrenceburg	1853
Samuel Reid	Salem	1853
O. L. Clark	Lafayette	1854
P. S. Shields	New Albany	1854
J. Penington	Milton	1854
J. F. Mothershead	Indianapolis	1854
George Sutton	Aurora	1855
G. B. Walker	Evansville	1855
C. Bowman	New Albany	1855
D. Mecker	La Porte	1855
John Sloan	New Albany	1856
W. W. Hitt	Vincennes	1856
T. W. Florer	Alamo	1856
John Moffett	Rushville	1856
T. J. Cogley	Madison	1857
D. Hutchinson	Mooresville	1857
C. West	Hagerstown	1857
W. R. Winton	Wabash	1857
T. R. Austin	New Albany	1858
Benjamin Newland	Bedford	1858
S. W. Fry	Crawfordsville	1858
M. M. Latta	Goshen	1858
John Sloan	New Albany	1859
R. M. O'Ferrall	Lafayette	1859
J. S. McLelland	Jefferson City	1859
R. E. Haughton	Richmond	1859
J. N. Green	Stilesvile	1860
Charles Fishback	Shelbyville	1860
L. Humphreys	South Bend	1860
Isaac Casselberry	Evansville	1860
Calvin West	Hagerstown	1861
Henry Cox	Danville	1861

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Names.	*Residence.*	*Elected.*
A. H. Robbins	Rochester	1861
J. A. Skinner	Vincenes	1861
W. I. Winton	Wabash	1862
H. G. Sexton	Rushville	1862
A. Preston	Greencastle	1862
John Moffett	Rushville	1862
A. G. Preston	Greencastle	1863
John Moffett	Rushvile	1863
Benjamin Newland	Bedford	1863
Calvin West	Hagerstown	1863
Wilson Lockhart	Danville	1864
T. B. Harvey	Indianapolis	1865
J. H. Woodburn	Indianapolis	1866
R. B. Jessup	Vincennes	1867
R. N. Todd	Indianapolis	1868
H. P. Ayers	Fort Wayne	1869
I. N. Rosenthal	Fort Wayne	1870
J. K. Bigelow	Indianapolis	1871
R. E. Haughton	Richmond	1872
Wilson Hobbs	Knightstown	1873
W. B. Lyons	Huntington	1874
F. W. Beard	Vincennes	1875
E. D. Laughlin	Orleans	1876
N. P. Howard	Greenfield	1877
Benj. Newland	Bedford	1878
J. D. Gatch	Lawrenceburg	1879
John D. Mitchell	Terre Haute	1880
F. J. Van Vorhis	Indianapolis	1881
S. H. Charlton	Seymour	1882
W. H. Schultz	Lebanon	1883
J. S. Gregg	Fort Wayne	1884
W. H. Hurt	Waynetown	1885
W. V. Wiles	Spencer	1886
C. W. Burket	Warsaw	1887
A. G. Porter	Lebanon	1888
Silas T. Yount	Lafayette	1889
H. D. Wood	Angola	1890
Erwin Wright	Huntington	1891
C. H. Smith	Lebanon	1892
T. F. Leech	Crawfordsvile	1893
C. S. Bond	Richmond	1894
E. L. Larkins	Terre Haute	1895
W. F. Batman	Lebanon	1896

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ALPHABETICAL LIST OF MEMBERS.

NAMES OF FORMER MEMBERS, DECEASED, REMOVED OR EXPELLED, ARE OMITTED FROM THE LIST. THE SECRETARY WILL CORRECT ERRORS, UPON NOTIFICATION, IN THE NEXT ISSUE.

Achilles, W. E., Evansville
Adams, F. P., Elkhart
Adams, Horace, Harlan
Adams, J. R., Petersburg
Adams, Ovid, Shelbyville
Adams, S., Brewersville
Adams, T. J., North Salem
Ader, Henry, Somerset
Aikman, E. A., Clinton
Alexander, J. F., Bruceville
Alexander, John H., Greensburg
Alexander, L. E., Pendleton
Allen, J. B., Richmond
Allen, Seth, Shideler
Allen, Wesley, West Newton
Allenbaugh, E. E., Huff
Amick, C. C., Hayden
Amos, E. G., Kempton
Anderson, R. S., Princeton
Anderson, W. B., Vincennes
Anderson, W. W., Fort Wayne
Andrew, V. E., Cicero
Angell, Chas., Pittsburg
Angell, C. E., Delphi
Anis, E. L., LaPorte
Anthony, J. R., Indianapolis
Armfield, T. C., Elwood
Armstrong, B. M., Fredericksburg
Armstrong, Ellis, Camdon
Armstrong, L. P., Newton
Arnold, John, Rushville
Arthur, C. S., Portland
Arwine, J. S., Columbus
Arwine, L. R., Columbus
Aspinall, N. B., Plymouth
Axline, J. A., Noblesville
Ayers, D. D., Marion
Bacon, C. P., Evansville
Bacon, D. N., Bunker Hill
Bailey, L. L., Spiceland
Bailey, Rachel, Spiceland
Baker, P. S., Greencastle
Baker, T. H. B., Pekin
Ball, J. R., Lebanon
Ball, L. L., Muncie
Ballard, N. H., Richmond
Banker, A. J., Columbus
Banta, H. J., Logansport
Barcus, Paul J., Crawfordsville
Barber, A. E., Mishawaka
Bare, John R., Salem
Barker, Joel T., Danville
Barnes, A. L., Southport
Barnes, C. A., Greenfield
Barnes, George O., Courtland
Barnes, W. C., Marion
Barnet, W. W., Fort Wayne
Barnhill, J. E., Indianapolis
Barnett, J. J., Hardinsburg
Barnett, W. M., Fort Wayne
Bartholemew, B., Danville
Bartley, R. W., Marion
Bash, J. M., Warsaw
Bassinger, T. W., Petersburg
Bates, A. J., Kokomo
Bates, J. M., Ripple
Batman, W. F., Lebanon
Baumgartner, Albert J., Elkhart
Baxter, J. C., Auburn
Bear, L., Vevay
Beard, S. C., Vincennes
Bearers, S. D., Decatur
Bearn, U. S., Muncie
Beasley, George F., Lafayette
Beaty, W. H., Worthington
Beaver, S. D., Decatur
Beck, W. S., Indianapolis.
Beckes, L. M., Vincennes
Begley, B. M., Englefield
Bell, Guido, Indianapolis

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Bell, John M., New Burlington
Bell, W. E., Terre Haute
Bell, Wm. H., Logansport
Bellis, J. T., Spencer
Benedict, H., Springport
Benepe, J. L., Indianapolis
Benham, C. W., Vincennes
Bennell, Chas., Diamond
Bennett, H. C., Fort Wayne
Bennett, H. M., Saratoga, Wyo
Bennett, J. B., Butler
Bennington, A. M., Max
Benson, J. L., Noblesville
Beraner, J. W., Indianapolis
Berst, J. H., Kokomo
Berteling, J. B., South Bend
Bickwell, I. J., Milford
Biggerstaff, J. E., Huntington
Binkley, J. F., Evansville
Bitz, L. B., Evansville
Blair, F., Princeton
Blair, J. S., Lynn
Blair, W. W., Princeton
Bloom, H. G., Swaningtown
Blount, R. F., Wabash
Blount, R. D., Wheeler
Boersig, J. A., Lawrenceburg
Boggs, M. M., Macy
Boling, L., Spencer
Bond, C. S., Richmond
Bond, E. P., Lawrenceburg
Bond, M. L., Aurora
Bond, R. C., Aurora
Booher, Daniel, Noah
Boone, B. H., Boggs town
Boor, W. F., Newcastle
Boor, W. A., Newcastle
Borden, C. B., Marion
Borton, T. A., Plymouth
Bosworth, J. M., Pennville
Bounnell, L. A., New Brunswick
Bowen, M. H., Lebanon
Bowen, M. M., Corunna
Bower, C. C., Elkhart
Bower, G. B. M., Fort Wayne
Bowers, A. J., Moore's Hill
Bowlby, Joseph, Shelbyville
Bowles, T. J., Muncie
Bowman, Chas., New Albany
Bowman, W. E., Elkhart
Boyden, W. J., Muncie
Boyers, J. S., Decatur
Brackney, M. F., Mooresville
Bracken, William, Greensburg
Bradfield, B. D., Logansport
Bradshaw, A. E., Beck's Mills
Brady, T. R., Wabash
Branch, C. H. Jr., Anderson
Brannock, B. B., Jasper
Brayton, A. W., Indianapolis
Brenton, W. H., Peru
Brent, I. N., Pittsboro
Briggs, C., Sullivan
Bright, William H., Martinsburg
Brill, J. H., Pittsburg
Brockway, C. T., Brookstown
Brooks, M. W., Hazlewood
Brooks, W. H., Fort Wayne
Brose, L. D., Evansville
Brown, B. A., Brightwood
Brown, John R., Indianapolis
Brown, J. R., Sumption Prairie
Brown, F. W., Seymour
Brownback, O. W., Pendleton.
Browning, W. J., Indianapolis
Brucker, Charles, Tell City
Brudi, G. G., New Haven
Bruncker, J., Riley
Bruner, Charles K., Greenfield
Bruner, Mary L., Greenfield
Bryan, D. C., Indianapolis
Bryan, Toney L., Evansville
Bryan, T. N., Indianapolis
Buchman, A. P., Fort Wayne
Bucklin, G. W., Muncie
Bulson, A. E., Jr., Fort Wayne.
Buntin, E. A., Greensfork
Burckhardt, L., Indianapolis
Burdi, L., New Haven
Burdsal, C. A., Lancaster
Burke, G. W., New Castle
Burkett, C. W., Warsaw
Burkley, J. T., Evansville
Burlingame, E. J., Petersburg
Burton, A. R., Princeton
Burton, G. W., Mitchell
Busjahn, F. A., Logansport
Butchel, Jacob, New Palestine
Butler, W. C., Leesville
Butler, W. H., Columbus
Butterworth, C. M., South Bend
Byers, A. R., Petersburg
Byers, J. D., Mitchell
Byers, R. S., Trafalgar
Cady, N. W., Logansport
Caldwell, J. C., Shelbyville
Calvert, R., South Bend
Cameron, J. F., Hamilton
Campbell, Frank, Shelbyville
Campbell, W. S., West Point
Caney, P. H., Vincennes
Canfield, B. V., Indianapolis
Cannon, G. H., New Albany
Cantrell, Francis A., Evansville

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Caplinger, C. A., Marsmal
Carey, W. W., Spencervile
Carl, O. W., Waupecong
Carnes, Z., Greenwood
Carpenter, W. P., Butler
Carr, F. M., Oregon
Carr, J. L., Monon
Carson, J. H., Indianapolis
Carson, L. E., Prairietown
Carson, L. O., Trader's Point
Carson, J. C., Valparaiso
Carson, W. C., Huntington
Carter, Amos, Plainfield
Carter, C. A., Indianapolis
Carver, W. F., La Otta
Casby, G. O., Burnsville
Case, W. W., Zenas
Caster, Colvin, Brookville
Castor, H. C., Indianapolis
Caylor, C. E., Nottington, P O
Cecil, A. A., Muncie
Chaffee, W. C., Huntington
Chamberlain, S. B., Lawrenceburg
Chambers, J. D., Fort Wayne
Charles, Etta, Summitville
Charlton, F. R., Indianapolis
Charlton, S. H., Seymour
Chenowith, J. T., Winchester
Chenowith, N. T., Windsor
Chenowith, T. A., Winchester
Chester, G. B., Elkhart
Chittenden, E. W., Anderson
Chittenden, George T., Anderson
Chitwood, Joshua, Connersville
Christie, J. H., Canaan
Clapp, William A., New Albany
Clapper, M. M., Hartford City
Clark, R. J., Monticello
Clayton, George R., Monroe
Cleveland, W. F., Evansville
Clevenger, B. F., Red Key
Clevenger, J. A., Garrett
Cline, L. C., Indianapolis
Clouser, N. D., Hartford City
Cluthe, William, Tell City
Cluthe, William, Evansville
Cobal, Jacob, Spencer
Cochran, I. N., Delphi
Cochran, T. C., Sharpsville
Coffin, A., Carlos City
Coleman, A., Logansport
Coleman, J. W., Union
Collins, C. C., Roachdale
Collins, G. M., Tipton
Combs, G. W., Indianapolis
Coombs, M. R., Terre Haute
Compton, J. W., Evansville
Compton, M. J., Evansville
Comstock, James A., Greensfield
Conley, C., Terre Haute
Conley, L. H., Gas City
Conn, W. D., Otisco
Connelly, H. M., Flat Rock
Conner, M. F., Red Key
Cook, Clark, Fowler
Cook, Benjamin, Wilkinson
Cook, John W., Pendleton
Cook, George J., Indianapolis
Cook, P. M., Solsbury
Cook, Charles P., New Albany
Cook, C. J., Gwyneville
Cook, H. W., Avilla
Cook, J. A., Goshen
Cook, L. H., Bluffton
Cook, W. H., Wolcott
Coombs, D. H., Charlestown
Coomes, M. J., Taylorsvile
Cooperider, J., Madison
Copeland, B. M., Benington
Copeland, C. C., North Madison
Copeland, W., Bennington
Corey, E. A., Chestertown
Corey, John D., McCordsville
Corey, Lavanner, Van Buren
Corey, L. J., Van Buren
Corey, C. N., Hartford City
Cornett, W. T. S., Madison
Corphey, J. M., Noblesvile
Cottingham, I. E., Evansville
Cottingham, Ch., Noblesville
Cotton, H. T., Zionsville
Cottrell, D. W., Muncie
Cowing, H. A., Muncie
Cox, C. E., Cannelton
Cox, C. R., Lynn
Cox, Edgar, Kokomo
Cox, D. A., Howell
Cox, J. D., Nebraska
Cox, N. D., Spencer
Craig, J. A., Greenwood
Craig, T. E., Lawrenceburg
Crapo, G. W., Terre Haute
Crapo, J. R., Terre Haute
Cravens, S. C., Bloomfield
Cravens, W. R., Bloomfield
Crawford, George F., Clifty
Crawford, E. W., Hanna
Crist, D. O., Indianapolis
Crompton, Charles C., Delphi
Cronkhite, C. C., Marion
Crose, S. E., Indianapolis
Crouse, H. M., Knightstown
Crowder, R. H., Sullivan
Crumrine, J. S. J., Landess

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Crume, G. P., Boswell
Culbertson, R. H., Brazil
Culbertson, S., Moorfield
Cully, J. F., Bainbridge
Cullop, J. A., Bruceville
Culver, D. M., Indianapolis
Cummings, J. D., Houston
Cummings, H. A., Mooney
Cummings, S. M., Elkhart
Cunningham, H. L., Salem Center
Cupp, M. F., Edinburg
Cure, H. W., Martinsville
Curtis, G. L., Columbus
Curtis, W. H., Pekin, China
Cushman, A., Graysville
Daily, D. R., Vincennes
Dale, B. S., Marion
Dalglish, H. T., Vevay
Dancer, John, South Milford
Daniels, G. W., Sweetser
Daniels, W., Corydon
Darby, A. B., Waterloo
Daugherty, C. A., South Bend
Davenport, W. B. H., Vincennes
Davidson, E. C., Lafayettte
Davidson, H. C., Hartford City
Davidson, J. F., Crawfordsville
Davis, C. P., Galena
Davis, E., Indianapolis
Davis, J. T., Jeffersonville
Davis, G. W., Miami
Davis, J. M., Greenville
Davis, J. R., Batesville
Davis, L. N., Farmland
Davis, Royse, Decker
Davis, R. P., Portland
DeForrest, D. A., Boonville
DeFrees, H. J., Napanee
DeHass, T. W., Indianapolis
Deitch, O. S., Indianapolis
DeLashmuth, V. E., Shelburn
Denant, H. D., Walkerton.
Denson, H. A., Indianapolis
DePew, E. W., Wolf Lake
Detechon, S. S., New Richmond
Derbyshire, Luella, Fort Wayne
Deweese, G. W., Fredericksburg
Dickey, A. S., Tipton
Dickes, J. T., Portland
Dickes, Philip, Greenville, O
Didlake, M. T., Monticello
Dillman, L. D., Connersville
Dill, N. C., De Soto
Dinnen, J. M., Fort Wayne
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